Gas Journal

VOL. 278. 106TH YEAR. LONDON, MAY 12, 1954 NO. 4745. PRICE 1/3

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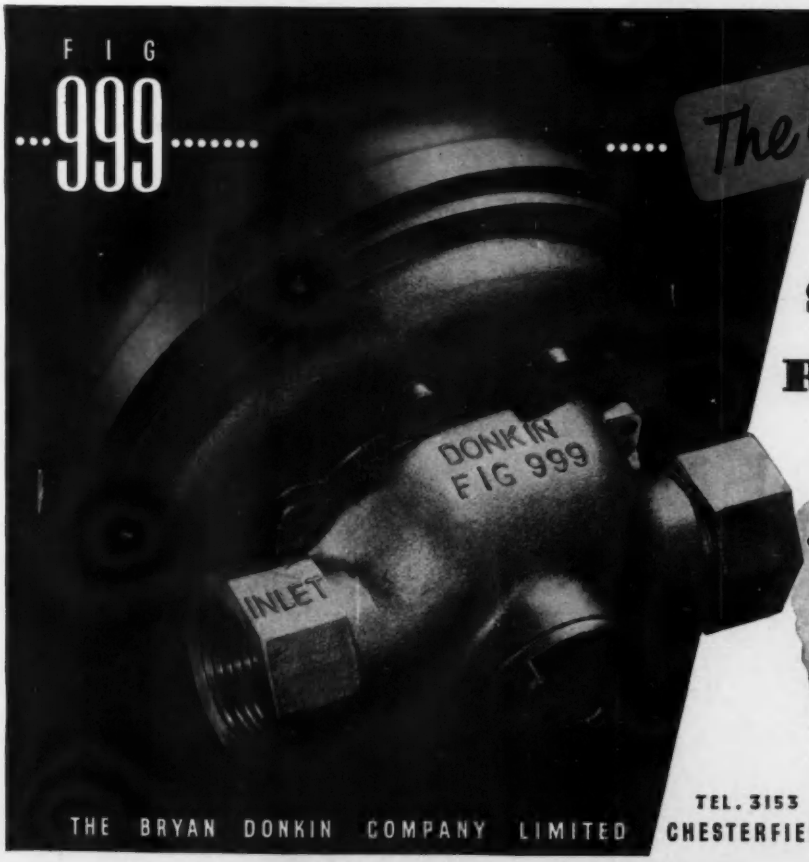

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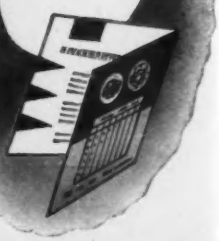

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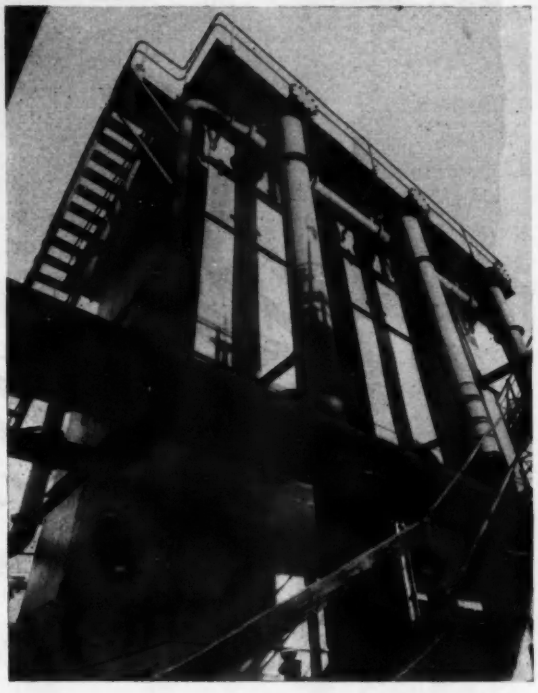

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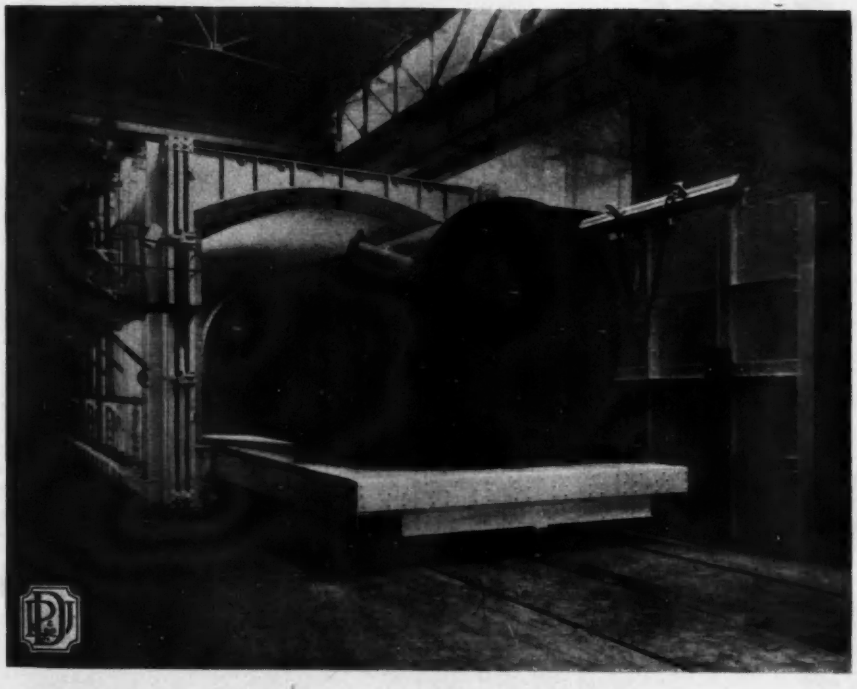

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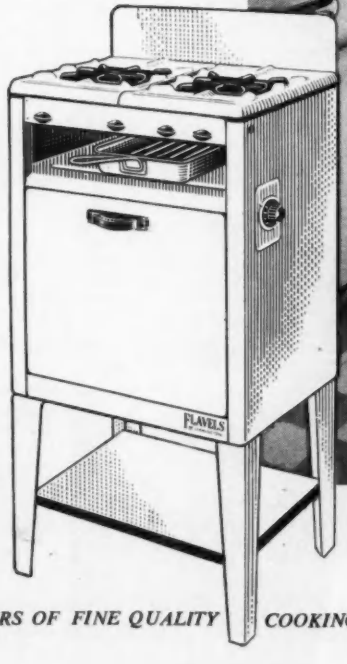

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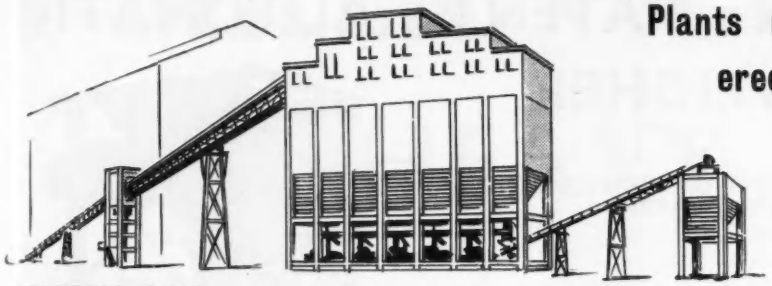

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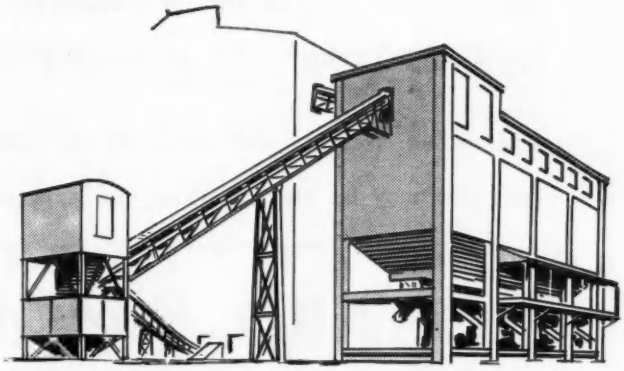

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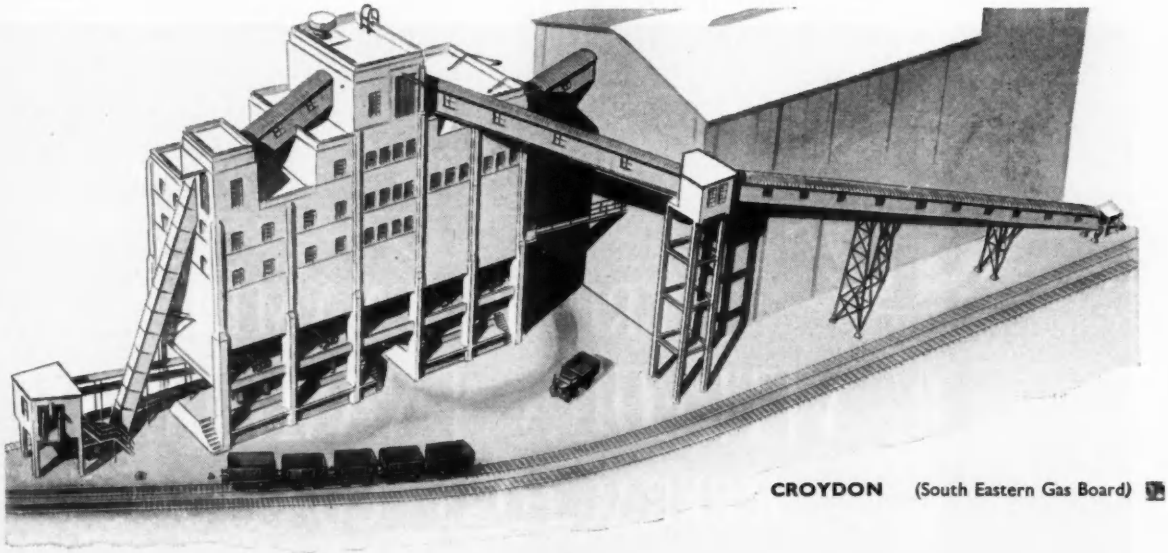

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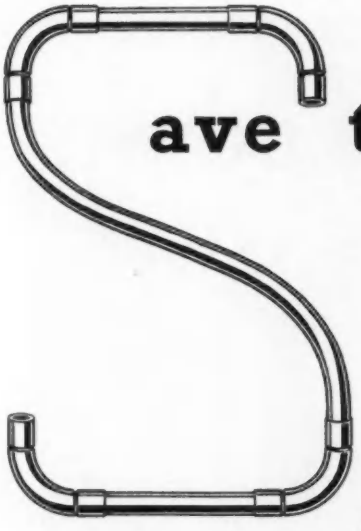

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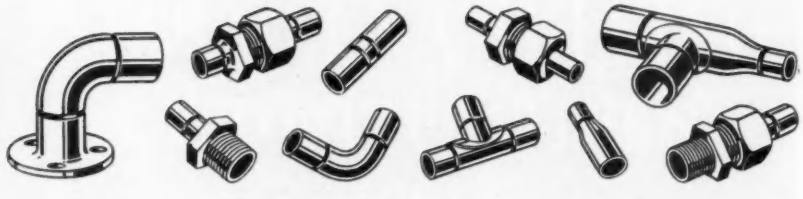

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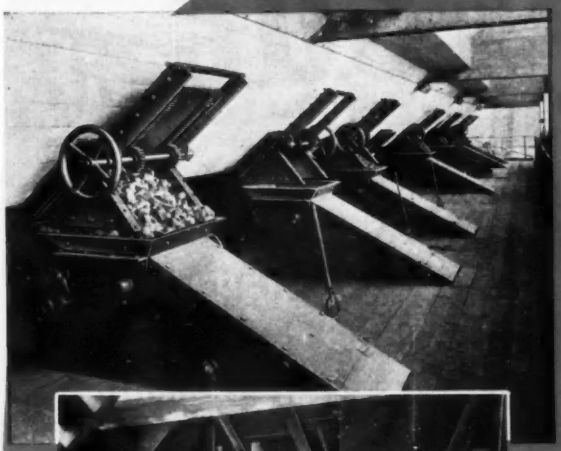

1. Battery of de-breezing screens attached to coke storage bunkers.

2. Hoppers for breeze attached to underside of screens.

3. Weighing and bagging from one of the battery of de-breezing screens.

This equipment was installed at the new Ponders End Gas Works, for the Woodall-Duckham Co.

Photographs by courtesy of Eastern Gas Board.

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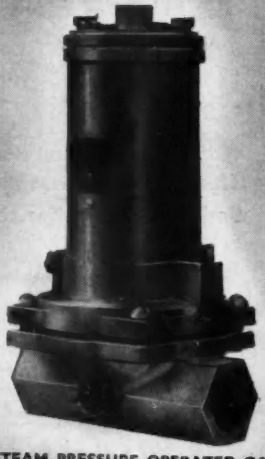

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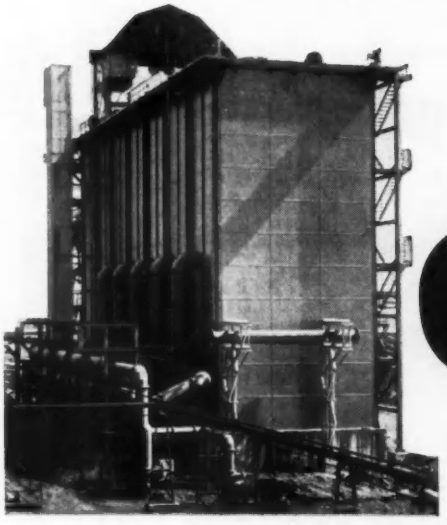
These Tower Box Purifiers are going up



One

The first large Balfour-Lecocq Tower Box Purifier was completed at Rotherham. Its capacity soon to be doubled to 20,000,000 cu. ft. per day. A second purifier of 7,500,000 cu. ft. per day nears completion at Southall. The foundations are laid for a third at Bow Common.

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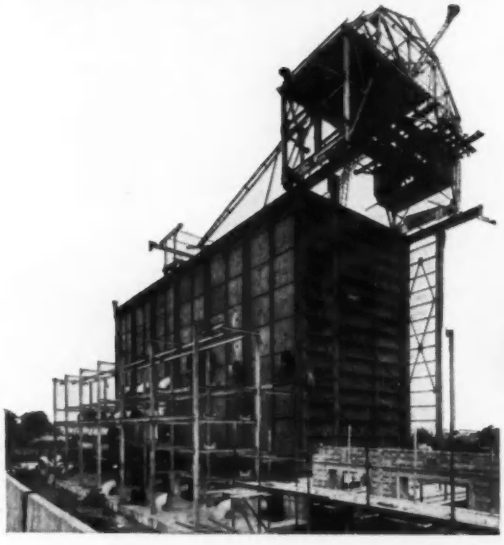
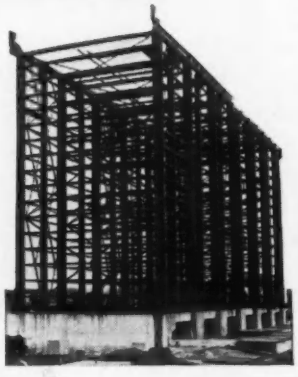


After

The unequalled technical resources of the Balfour organisation are at the service of those requiring detailed information on application of Tower Box purifiers or other gas equipment to their needs.



Another

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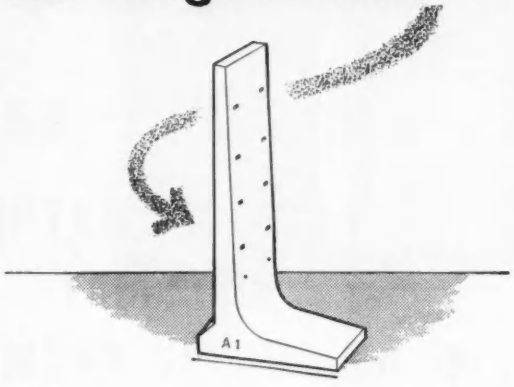

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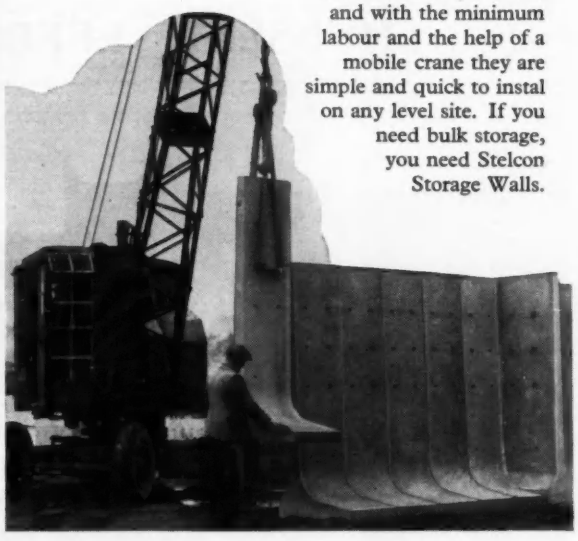

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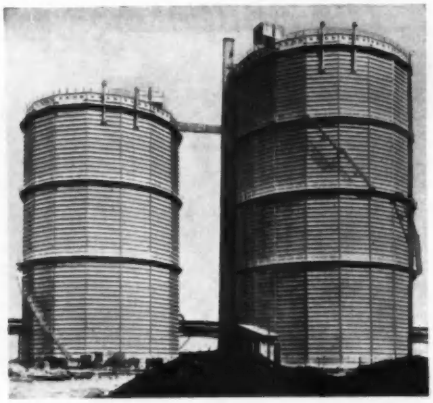
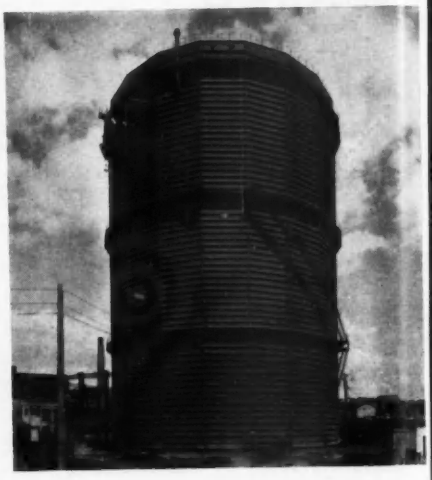


South Africa

OVERSEAS CONTRACTS



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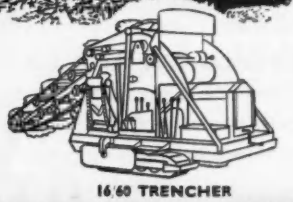

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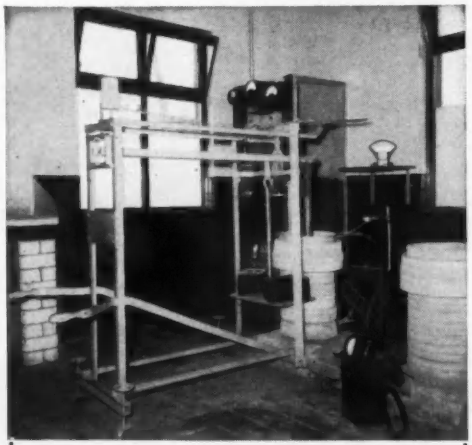

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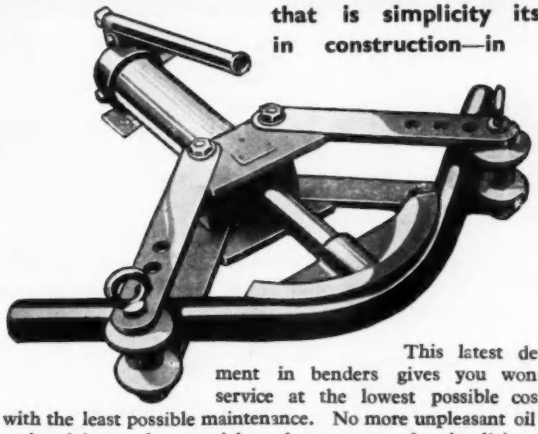

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B The battery of de-breezers for bagging and lorry loading.

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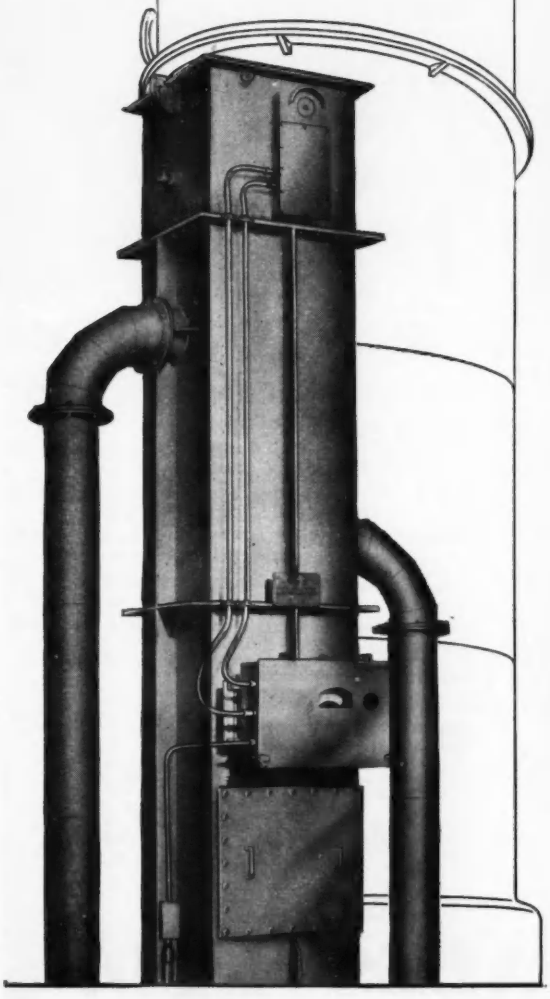

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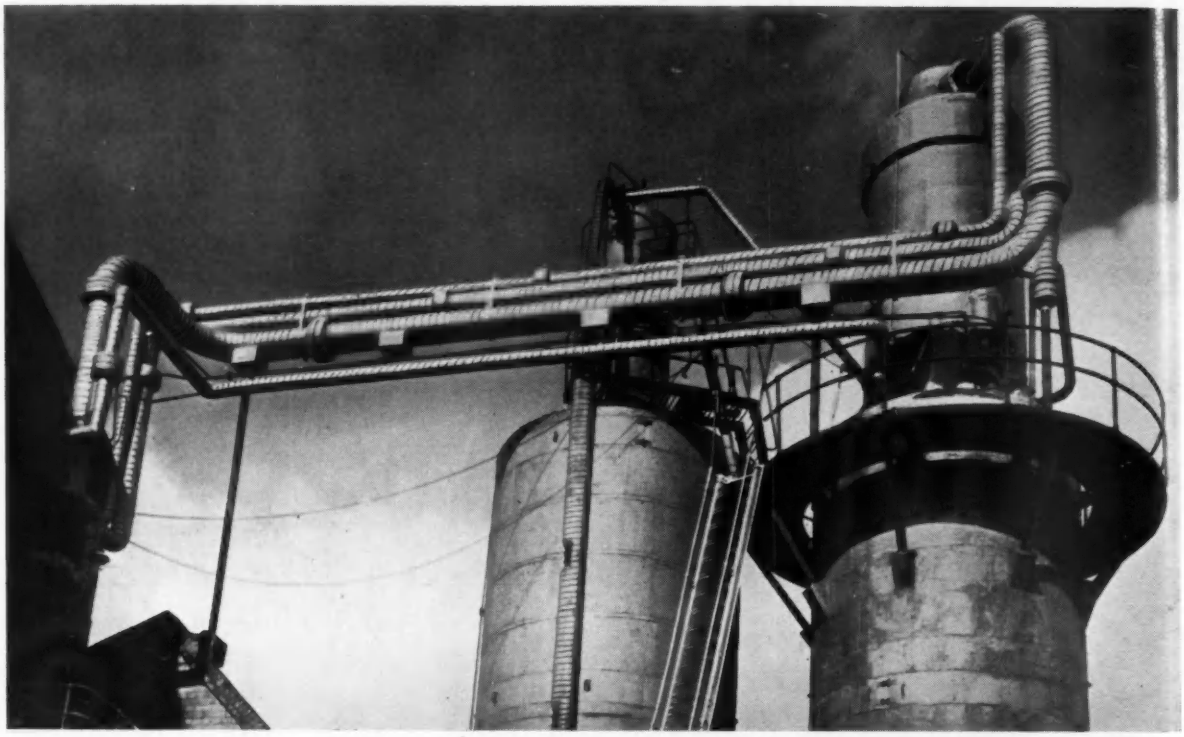

The photograph, taken at a large chemical works in London, shows the insulation and protection of exposed pipes. These are insulated with Onazote, wrapped with adhesive tape, followed by plastic bitumen dressing and finished off with Aluminium painted DENSELT TAPE, spirally wrapped over the plastic bitumen dressing.

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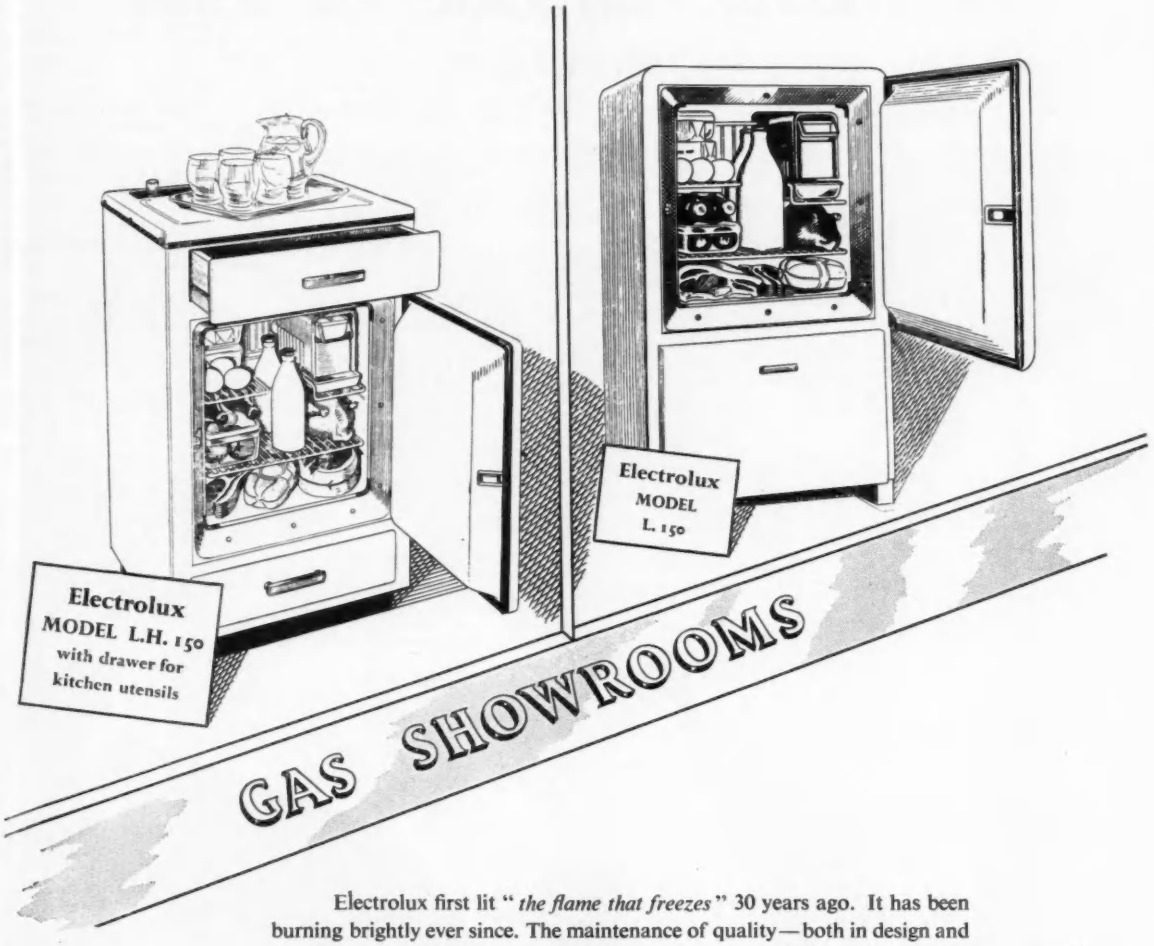

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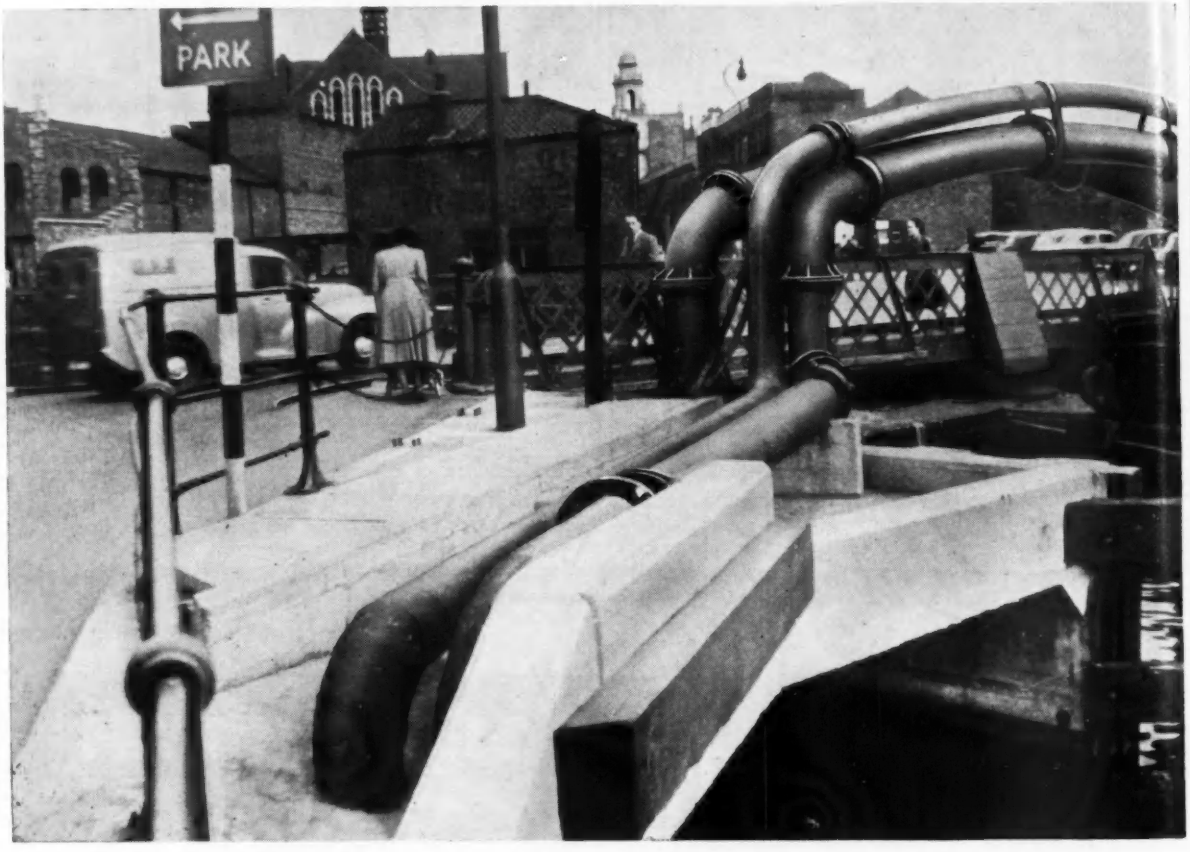

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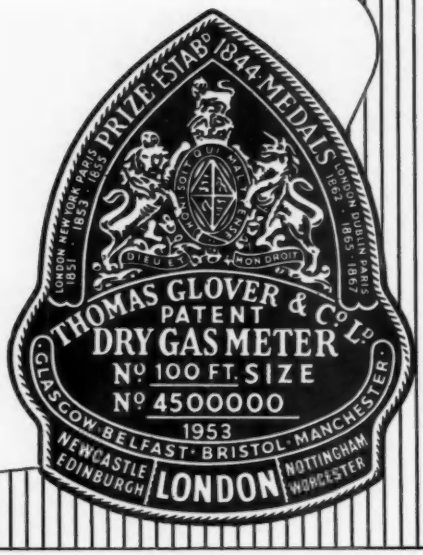

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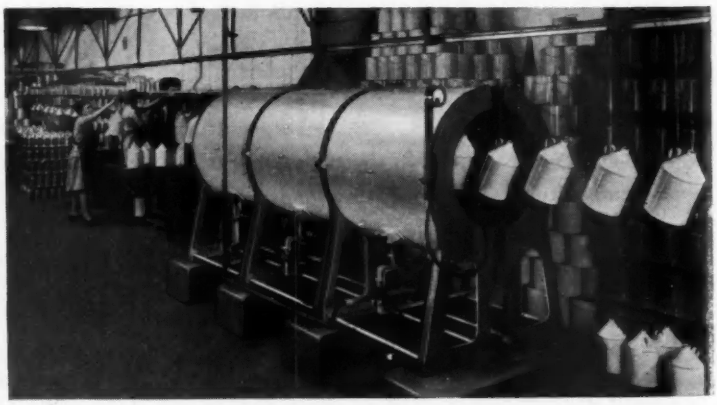


GAS INFRA-RED installations by Parkinson and Cowan not only speed up the rate of drying but ensure a better finish at the same time.

Our illustration shows tinplate cans being dried in 1½ minutes by three 2 ft. diameter Gas Infra-Red tunnel units with a torsional type conveyor. These tinplate cans emerged with a finish unobtainable by any other means in so short a space of time.

Put GAS INFRA-RED to work in *your* factory. We shall be glad to let you have full details.

PARKINSON AND COWAN INDUSTRIAL PRODUCTS

(A DIVISION OF PARKINSON AND COWAN LIMITED)

DEPT. Q, COTTAGE LANE WORKS, CITY ROAD, LONDON, E.C.1 PHONE: CLERKENWELL 1766/7

IR3

Gas Journal

VOL. 278. No. 4745 106TH YEAR May 12, 1954

COKE OVEN GAS

'We now use more than 25 mill. tons a year of coal in coke ovens, and this may rise to more than 30 mill. tons by 1960. Carbonisation in standard coke ovens aims at the production of a hard dense coke . . .' That statement by the President of the Institute of Fuel may be taken as the authentic view of the function of the coke oven in the fuel economy of this country. In order to fulfil this function the coke oven must be supplied with strongly coking coals. Reserves of these coals are running out in some of the sources of supply hitherto available—but this point is irrelevant to the subject of Mr. E. H. Harman's address to the Fifth Annual Staff Conference staged by the East Midlands Gas Board at Skegness. He set out to compare the results of carbonisation in the coke oven with other types of carbonising plant and the effect of the use of coke oven gas in the load factor on the gasworks.

It is interesting to note that the East Midlands Board is actually the biggest buyer of coke oven gas, though it stands third in the percentage, 47.69, which this type of gas represents of the total gas available in its area, with Wales first at 61.68% and Northern second at 49.85%. The use of coke oven gas by the remaining boards in England is very much less. The gas itself is not significantly different from straight coal gas produced in other intermittent forms of carbonising plant. The gaseous thermal yield per ton of coal is lower, the coke production is higher. Representative figures were set out in an informative table.

It is not surprising, in view of the relatively high value of the coke produced compared with the cost of the coal treated—the figures used by Mr. Harman in his calculation of costs were 77s. 3.3d. and 48s. 10.8d. per ton respectively—that the use of a portion of the coal gas for underfiring is viewed with equanimity. The practice is obviously defensible since coke is the main production and gas no more than the major by-product of the 'standard' coke oven process.

We worked out the figures roughly and found that a higher percentage of thermal yield—*i.e.*, the sum of the gross thermal contents of coke, gas and tar—was realised with rich gas firing than with producer gas firing. A very high percentage indeed is achieved when the ovens can be heated from an outside supply—and this is not cheating either, since one can reckon blast furnace gas as near as maybe a waste product. It was curious too to find that, on the figures given in Mr. Harman's table and allowing for nothing else, as for instance waste-heat recovery, the intermittent gasworks processes (horizontal retorts, horizontal chamber ovens, intermittent verticals), came out about the same as the rich gas fired coke oven, while the continuous vertical lay midway between this figure and that for the blast furnace gas fired coke oven.

If the gas yield in the coke oven is very low so also is the man-power per ton of coal handled. But these figures are only significant when it is sought to use this type of plant the other way round—*i.e.*, with gas as the main product. Mr. Harman was not concerned with that aspect of the coke oven. His main concern was with the assessment of a just price to be paid by the gas industry for gas. From the example he gives of the calculated basis of such an assessment we presume we should be right in describing this as 'surplus gas' since the coke production is well over 50% of the weight of coal used. The example is interesting, but we need to heed his warning that the net cost of gas is a relatively small difference between the large sums representing costs of coal and operation and values of coke and other products, so that, should one or other of these calculations be in error by as little as 1%, the consequent error in the net gas cost could be as much as 12%.

Treating coke oven supply as base load plant, Mr. Harman exhibited very clearly the effect of this on the load factor of the gasworks plant which must take up all or most of the variation in demand. And he showed that this effect may be very serious, though he did not pursue the argument into the cost of manufacture at the gasworks. His treatment of the economic effect of rich gas firing at the coke ovens as compared with producer gas firing is also very much condensed. On the face of it, 37 therms of gas worth nearly 25 shillings is sacrificed in rich gas firing against, for producer gas firing, 2.6 cwt. of coke, which even at this high price is worth no more than 10 shillings. The money factor is not, of course, decisive, since the coke oven is installed to make coke and not gas, and coke of a specific quality. Attention is, however, being directed towards this question of the character of fuel best suited to the heating

not only of coke ovens but of retorts. In the latter case Mr. M. S. Gaskill, for instance, has shown that in some cases it is economical even to use coke of the best quality in the producer.

As long, then, as hard, dense coke is required for the steel making process, and as long as the supply of coking coal lasts, the coke oven will be an important feature of the carbonising industries. The coal gas made, whether the whole or the surplus of it, must be absorbed into the gas distribution system. It will remain a base load supply and the gas engineer will be left with the problem of adapting the gasworks plant and organisation to a relatively low load factor. As the best coking coals run out the coking process and finally the steel-making process itself must be modified and adapted to coals of a definitely weaker coking category. These problems are already exercising our colleagues on the Continent. Very shortly we, too, shall have to face them.

AN ITALIAN CENTRE OF CONSULTATION

When the Italian Technical and Scientific Press Association (A.I.S.T.S.), reorganised on new lines, was able in 1949 to resume its activity, which had been interrupted by the last world war, one of the aims outlined in the programme issued by the Council of the Organisation was that of setting-up in Milan a permanent centre of consultation for the Italian and foreign technical and scientific Press which would be on a par with the major institutions of its type at home and abroad. Libraries of cultural, academic, and industrial organisations, both public and private, are not lacking in Milan. But the great majority of these libraries, if not practically all, do not cover the periodicals of the entire technical and scientific field. The scholar was, until lately, compelled, in his bibliographical researches, to travel the length and breadth of the city to find the publication which interested him and to find a means of consulting it.

The end in view, therefore—and we have already mentioned this in the 'JOURNAL'—was to facilitate the scholar's work without in any way supplanting the other valuable libraries of the kind in Milan, but simply fulfilling an auxiliary function. A further aim was to put technical and scientific literature at his disposal in a place where at the same time he is given the possibility of completing his knowledge by inspecting applications of technique and science in practice, displayed in the adjoining National Museum of Science and Technics opened in February. This library is also at the disposal of those scholars using the A.I.S.T.S. periodical centre of consultation.

We have now received from the Association a most delightful set of publications on the work of Leonardo da Vinci issued by the Committee in charge of the celebrations of the Fifth Centenary of Leonardo da Vinci's birth. The enormous field of art, science, medicine, engineering, philosophy, ballistics, and so on covered by Leonardo da Vinci is both staggering and bewildering to contemplate. Here, at any rate, the application of the word 'unique' is amply justified.

It is gratifying to know that the periodicals shown in the reading room of the Museum—and they include the 'GAS JOURNAL'—have aroused great interest and have in fact made the world's technical and scientific literature more widely known to Italian scholars.

GASIFICATION OF FINES

The report of the Working Party set up by the Organisation for European Economic Co-operation, under the title 'Increased Thermal Efficiency of Solid Fuel through Gasification,' is a comprehensive document. It will be more readily understood if its perusal is preceded by a re-reading of Dr. F. J. Dent's Research Communications GC.1 and GC.8, to which, indeed, it does not appear to add exceptional or original material. It was no doubt originally written in French. One can appreciate the difficulty of translating such a word as 'valorisation.' The equivalent here adopted is 'benefication.' This is not a mere quibble. The 'benefication' of solid fuel is defined as converting it into products of greater value. Probably the jargon term 'up-grading' is, in point of fact, a more accurate rendering. The degree of up-grading will be obviously the greater, the lower the value of the initial fuel. The types of fuel envisaged in the report are non-coking fine coals, fines from coals which, though possessing coking properties, also contain a high percentage of ash yielding a low-grade coke on carbonisation, and fines from such low-grade fuels as lignites, shale, and peat. A large number of processes, in various stages of development, are briefly but adequately examined. Many of these result in the production of gas of the low-grade or producer gas type, but the Working Party concentrated first on the gasification of solid fuel in the form of fines to obtain either synthesis gases or town gas, although they recognised that these objectives were to an extent distinct from one another.

In a fairly long section of the report the theoretical aspects of the several techniques—fluidisation, suspension, static and moving fuel beds, and so on—are pretty fully discussed. Picking on a few points (though most of these have been adequately stated by Dr. Dent), we have in the gasification of beds of static particles the disadvantage that these processes are very dependent on the type of coal. They are hindered by caking and by fusion of ash. Batch fluidisation is similarly sensitive to caking or disintegration and to ash fusion. It is hoped, however, that gasification of coal particles in suspension may have a fair measure of independence in regard to the type of coal used. Quite a number of promising plants, more or less developed, are described under this heading.

When it comes to the direct production of town gas from fines, full acknowledgment is accorded to the work of our own Gas Research Board and its successor, the Gas Council, starting from the Lurgi process. The Bianchi process of Gaz de France, embodying similar principles, aims at the 'benefication' of highly reactive lignites. It would appear that operation under pressure and the use of oxygen, rather than air, is essential to any such process if the calorific value of the resultant gas is to reach that required by town supply.

The object of these processes is, as Dr. Dent has stated, at any rate from the British point of view, to increase substantially the range of coals which can be used for town gas manufacture. All are all-gas processes. It would appear that if gas is to be produced by them at a saleable price, unassisted by any return on coke, the thermal efficiency will have to be very

high. Costs of all kinds will have to be kept down. Further, it would appear that the commercial possibilities can only be finally explored in a plant of considerable size—so large, in fact, that it may be beyond the capital resources not only of any one area board but of any one country. This Working Party considers the possibility of pooling the expense of such research as would be financially beyond the scope of any individual country. At the same time it recognises that the difficulties of international co-operation may be great. The fuels available and the objects to be attained may be very different in different countries. Perhaps before we go so far as this we in Britain might look further into the possibility of a national effort on a big scale with our own resources.

The report itself shows signs of rapid proof-reading leaving verbal errors which, though they present no great obstacle to comprehending the meaning, slow-up the reading. Otherwise it is an excellent survey of the field it sets out to cover.

SALES FORCE MORE THAN DOUBLED

The movement towards enabling gas consumers to purchase appliances at approved retail shops other than the industry's own established showrooms and service centres is growing. Just over three months ago, when the East Midlands Gas Board inaugurated its dealer co-operation arrangements, we recalled that the North Thames Gas Board had in 1946 revived a scheme of augmented selling under which in pre-war days the Gas Light and Coke Company developed a formidable force of dealers selling on the Company's behalf. Alive to the advantages of utilising the display and sales facilities of ironmongers and other tradespeople, the North Western Gas Board has followed suit. In announcing the new plan on May 5 the Board stated that its sales organisation would be more than doubled as the result of arrangements concluded with the National Federation of Ironmongers and the Co-operative Union, Ltd. Selected stores in both organisations will sell approved gas and coke burning appliances under agreed terms, and thus some 200 shops will be added to the 140 gas showrooms and service centres throughout the area. Terms and conditions offered to the purchaser will be identical with those available at the Board's showrooms. The appliances will be installed by the Board, and the buyer will have at his disposal the same after-sales service as is available directly from the Board. Appointed dealers will display a sign of identification which will also carry the Board's guarantee that the appliances are efficient.

NORTHERN TARIFFS REVISED

In our advertisement columns this week the Northern Gas Board announces alterations in gas prices and tariffs for gas supplies which are to take effect from the next meter readings. The changes are of interest not only to the consumers concerned but to the industry generally in that they are based on principles set out in a general policy statement issued by the Board six months after vesting date. The new scales, which represent an average increase of 0.7d. per therm, make provision to cover increases in coal prices, railway charges, salary and wage rates, and cost of materials. The 'published price' will apply to the first 30 therms consumed in any quarter. For consumptions in excess of 30 therms the charge will be two-thirds of the 'published price' for up to 5,000 therms in a winter quarter or 2,000 therms in a summer quarter; three-fifths of the 'published price' for winter consumptions of 5,000-10,000 therms and summer consumptions of 2,000-4,000 therms; 52½% of the 'published price' for winter quarter's consumption exceeding 10,000 therms, and half price for summer quarter's consumption exceeding 4,000 therms. The Board will continue its supplementary charge of 1¼d. per therm (up to 30 therms) for prepayment meters, with an additional supplement of 1d. per therm (up to 30 therms) in the case of prepayment consumers who use fittings and apparatus provided by the Board. The charge for gas for public lighting is to be according to the tariff, with a special discount of 20%, but any lighting authority may elect alternatively to be charged at a net flat rate of 14¼d. per therm. Without offering any outstanding concessions the new tariffs are calculated to promote increases in consumption per consumer—a trend which offers the greatest hope of the gas industry keeping in step with increasing costs outside its control. Where gas is retained solely as a standby the Board is empowered to ask for a minimum payment each quarter. The appropriate domestic charge will be from 2s. 6d. to 3s., and where gas of less than that value has been used in any quarter the minimum payment will be required.

MR. THERM'S PUBLICITY

One does not need the advertising experts' testimony that the general standard of visual publicity on hoardings and in magazines is being raised year by year; that is self-evident. What is helpful, and pleasing too, is the published opinion of competent judges that gas publicity is at least holding its own in this highly competitive field. Such informed journals as *Advertisers' Weekly* and *World's Press News* have, in their analysis of current advertisements, frequently commented favourably on the high standard of material produced by the Gas Council and certain area boards. In the May 7 issue of *W.P.N.*, 'Copy Chief' offers further words of encouragement. Praising the large-scale advertisers who take the hoardings really seriously and set out to use them with the maximum effect, he writes: 'The Gas Council, for example, usually manage to tell a direct, quick story and to keep their designs, at the same time, pleasing and clean-looking.' Later in his remarks he praises a current gas water heating poster which, to judge from the description given, was one produced for the North Thames and South Eastern Boards. This confirms our own view that as far as posters are concerned, the Gas Council is doing a good job, and that the style thus set is ably followed by the London Boards. It would be nice if we could state that this standard was maintained in other areas, but, alas, only perhaps in the East Midlands is a comparable quality attained. As far as Press advertising is concerned we have not yet been able to glean the experts' comments on the Gas Council's new series of layouts. Of the four we have seen, one deals with cooking ('My new gas cookers have a built-in cook, says Mr. Therm'), one with water-heating, and two with refrigeration. All four are bright and well written—much better as a sales message than the recent series emphasising various aspects of household drudgery. Should we not give thanks, therefore, that our publicity—at least at the national level—is in good hands?

TULLY PLANT FOR SAN SEBASTIAN

The Gas Undertaking at San Sebastian, Spain, has placed a contract for an installation of Tully complete gasification plant. This installation will consist of two Tully complete gasification generators each with a capacity of 500,000 cu.ft. per day and each complete with automatic grate, carburettor, and waste heat boiler. The installation also includes overhead bunkers, automatic fuel handling, and other auxiliary plant. The contract has been obtained as a consequence of collaboration between Société Fours Picard of Paris, and Tully Engineering Co., Ltd., Newark.

Personal Notes

SIR HENRY WILSON SMITH, K.C.B., K.B.E., has been appointed Deputy Chairman of Powell Duffryn, Ltd.

ALDERMAN C. R. BATES is retiring from the Chairmanship of the East Midlands Gas Consultative Council. The name of his successor has not yet been announced.

MR. W. R. EDGAR, of William Edgar & Sons, Ltd., will, it is announced with regret, be away from business for some considerable time owing to his continued illness. During his absence, MR. W. J. EDGAR is acting as Deputy Managing Director.

MR. G. M. HOOPER, Surveyor to the North Thames Gas Board, has resigned, and the following changes in the estate department to take effect from June 1 are announced by the board: MR. B. H. TEBBUTT to be Surveyor; MR. F. G. M. WATSON to be Assistant Surveyor.

MR. J. H. NUTTON, who joined the former Swansea Gas Light Company as a distribution engineer in 1946, has been appointed Sales and Service Officer to the Grimsby Group of Undertakings. Since nationalisation, Mr. Nutton has been distribution officer to both the Swansea and Carmarthen Groups of the Wales Gas Board. He was responsible for the planning of gas mains in Swansea's housing estates and also for the re-designing of the distribution system in the town centre.

MR. A. HARRISON SLADE, Divisional Marketing Officer, North Western Division, National Coal Board, was elected Chairman of the North Western Section of the Institute of Fuel at the annual general meeting. MR. R. F. W. GUY (Powell Duffryn Technical Services, Ltd.) was elected Vice-Chairman; MR. D. B. GILBERT (I.C.I.) Hon. Secretary, and MR. T. A. TOMLINSON (West's Gas Improvement Co., Ltd.) Hon. Treasurer. Re-elections to the Committee were: G. GILL (Ministry of Fuel and Power), L. MILLS (B.E.A.), H. L. TRAFFORD (John Thompson Water Tube Boilers), D. G. HARVEY (B.E.A.); DR. A. A. HIRST (N.C.B.), and DR. R. PENDENNIS WALLIS (Baker, Kelly & Wallis). Two vacancies were filled by G. DOXEY (I.C.I.) and H. H. THOMAS (North Western Gas Board). MR. J. E. SANDIESON is now Chairman of the Liverpool Sub-Section Committee.

ALDERMAN G. E. HODGKINSON, O.B.E., of Coventry, has been re-appointed a part time member of the West Midlands Gas Board.

MR. B. THORNTON has resigned his Directorship of the Wellman Smith Owen Engineering Corporation, Ltd., for reasons of ill health.

Obituary

MR. R. A. SLIPPER, a Director of William Edgar & Son, Ltd., for 17 years, died in a London nursing home on April 30.

MR. JOHN MORAN, who retired from Stirling gasworks three months ago, has died at the age of 65. He and his father, the late Mr. John Moran, had a combined service at Stirling amounting to 90 years.

MR. A. F. TOPLEY, a Director of Woodall-Duckham Construction Company, Ltd., died on May 5 at the age of 63 after a long and painful illness faced with great courage. Mr. Topley joined the Woodall-Duckham Company in 1912 and for most of his life played an outstanding part in the work of the Company's Sales (Gas) Department. He was appointed Director in Charge in 1949. He gave devoted and enthusiastic service to the Company throughout his working life. Mr. Topley, who was a Member of the Institution of Gas Engineers and of the Institute of Fuel, was well-known in the gas industry. He leaves a widow, two daughters, and a son.

Diary

May 13.—LONDON JUNIORS: Whole-day visit to Ciment-Fondu Works.

May 13-14.—WALES AND MONMOUTHSHIRE SECTION, I.G.E.: Spring Meeting, Porthcawl.

May 14.—MIDLAND SECTION, I.G.E.: Annual General Meeting. Queen's Hotel, Birmingham. 2.30 p.m.

May 15.—SCOTTISH JUNIORS (EASTERN): Annual General Meeting, Edinburgh.

May 17.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, Kingsway, W.C.2, 11.30 a.m.

May 17.—WEST MIDLANDS G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.15 p.m.

May 18.—LONDON AND SOUTHERN SECTION I.G.E.: Spring Meeting, Chairman's Address and Annual Luncheon.

May 17-18.—EASTERN SECTION, I.G.E.: Annual General Meeting. 'The Development of Safety Measures in the East Midlands Gas Board,' D. W. Ault. Skegness.

May 19.—WALES JUNIORS (NORTH): Visit to Staveley Iron Works, Chesterfield.

May 19.—SCOTTISH G.C.C.: 26, Drumsheugh Gardens, Edinburgh, 11.30 a.m.

May 19-20.—GAS SALES AND SERVICE CONFERENCE. Floral Hall, Southport. The special train from Euston on May 18, will leave at 3.35 p.m., and not 3.25 p.m. as previously announced.

May 22.—SCOTTISH ASSOCIATION OF GAS MANAGERS' BOWLING CLUB *versus* SCOTTISH GAS BOARD BOWLING CLUB, Granton Gasworks Bowling Green, 2.30 p.m.

May 22.—SCOTTISH JUNIORS (EASTERN): Golf Outing, Carnoustie.

May 25.—WOMEN'S GAS FEDERATION: Annual General Meeting, Caxton Hall, Westminster.

May 27.—NORTH THAMES G.C.C.: Caxton Hall, Westminster.

May 28.—SCOTTISH JUNIORS (WESTERN): Visit to the Power-Gas Corporation, Ltd., Stockton-on-Tees.

May 28.—LONDON JUNIORS: Annual General Meeting. 178, Edgware Road. 6.30 p.m.

June 1.—SOUTH EASTERN G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

June 3.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

June 3.—MIDLAND JUNIORS: Ladies' Day.

June 5.—SCOTTISH JUNIORS (EASTERN): Annual Outing, Leven.

ROCHDALE HORNETS AND ENGLAND

A presentation was made at a social function of Stoves, Ltd., Welfare Association on April 30, to Ted Cahill (Fitting Shop) to mark the occasion of his selection as full back for the 1954 Rugby League Australasian touring team.

Mr. R. Knight, Joint Managing Director, on behalf of the Welfare Association, presented him with a suitably inscribed gold wristlet watch, also a substantial cheque as a gift from the Directors of Stoves, Ltd. Mr. Knight congratulated him on behalf of the Company and his many friends, wished him well on the tour, and referred briefly to his sporting activities.

Cahill first played rugby for Stoves, Ltd., in the St. Helens Amateur League, later for Vine Tavern, then Liverpool Stanley and after two seasons moved to Rochdale Hornets, of which team he is now Captain. He has also previously been capped for Lancashire and England. The recipient suitably responded and thanked his well-wishers.

In the group photograph are (left to right) E. Cahill, W. Richardson (Works Manager and Director), R. Knight (Joint Managing Director), and G. E. Jerams (Chairman of the Welfare Association).

THE BRIGHTON INSTALLATIONS AT PORTSLADE

The three installations of W-D Continuous Vertical Retorts at the Portslade Works of the South Eastern Gas Board.

The first installation commenced gas making during September 1953, the second was in operation by the end of the year and the third will be at work later this year.

The total gas making capacity is over 15 million cu. ft. per day. The design is such that a fourth section can be added in the future to increase the capacity to over 20 million cu. ft. per day.

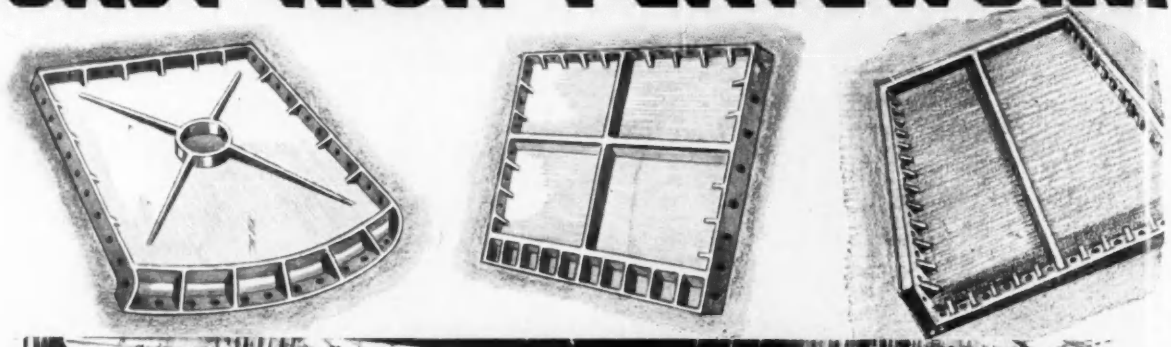
WOODALL-DUCKHAM

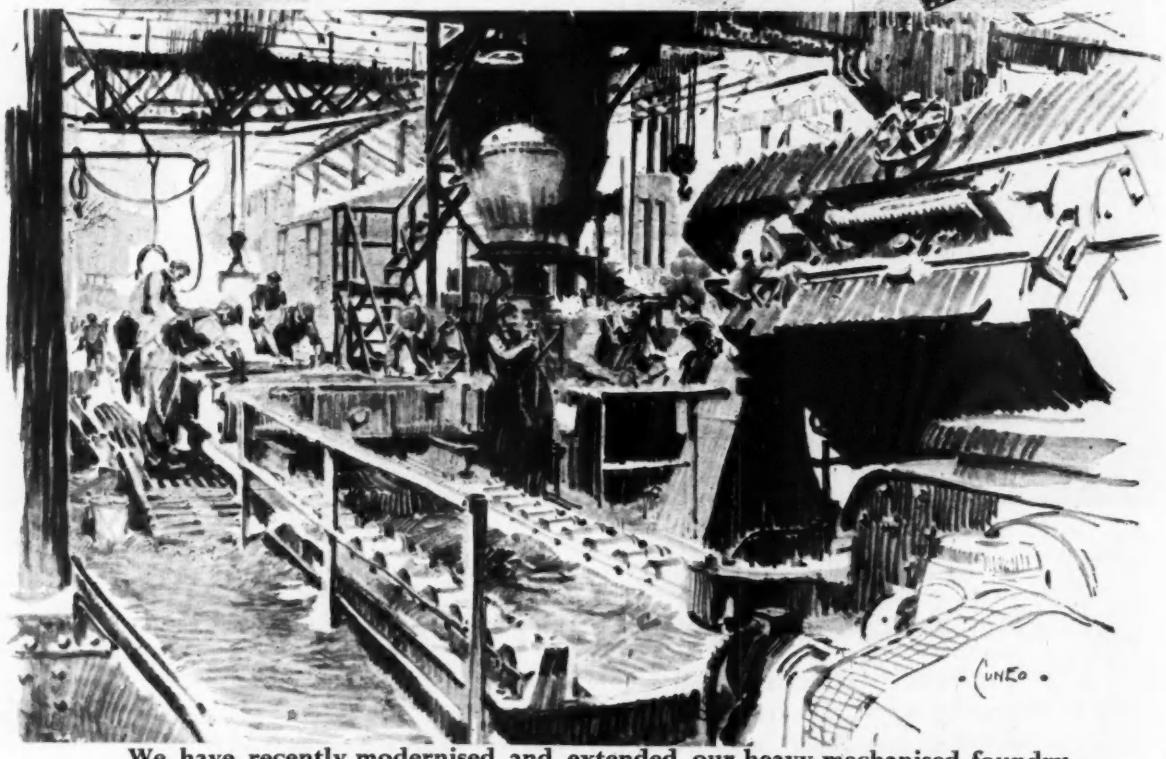
CONSTRUCTION COMPANY LTD.

Woodall-Duckham House, 63-77, Brompton Road, London, S.W.3

Telephone: KENsington 6355 (10 lines) Telegrams: Retortical (Southkens) London

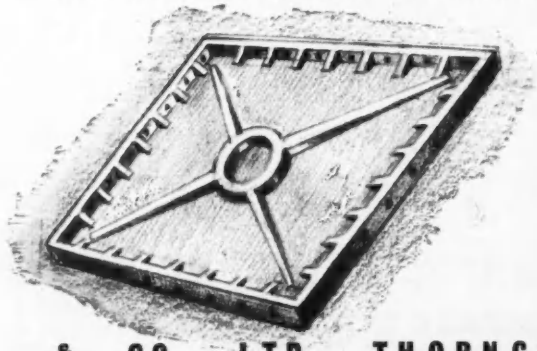
CAST IRON PLATEWORK





We have recently modernised and extended our heavy mechanised foundry and are able to produce promptly and efficiently all types of cast iron platework suitable for machine moulding in boxes up to 7′ 6″ x 5′ 6″

OUR REPRESENTATIVES WILL BE HAPPY TO CONSULT WITH YOU IN REGARD TO YOUR REQUIREMENTS LARGE OR SMALL



NEWTON CHAMBERS

& CO. LTD. THORNCLIFFE, Nr. SHEFFIELD

B.I.F. Confounds Critics as Increased Buyers Come to the Fair

It is probable that 1954 will be remembered as the most critical year in the history of the British Industries Fair, a history which, it is to be hoped, will become progressively longer as the years go by. In the early stages of planning a wave of pessimism flooded many of those bodies, including individual manufacturers, which are instrumental in making this great showcase for British products a success. Happily the gloom was dispelled and our national determination asserted itself.

The evidence of this determination—and its reward—lies in the fact that acceptances showed a marked increase and it is anticipated that at the close of this 33rd Fair, on May 14, 125,000 overseas visitors will have sought British goods at the B.I.F. since 1947, more than twice the total to visit all the Fairs before the war. Castle Bromwich is fully occupied with over a thousand exhibitors; a selection of exhibits relevant to the gas industry appears below.

This is the last Fair to be held under Board of Trade management. In future the Fair will be in the hands of a public corporation, the members of which will be appointed by bodies representative of British industry and trade, with one member appointed by the Government. The 'popular' appeal of this move may not be altogether unrelated to the fact that Mr. Kenneth Horne will be lending his weight to the project.

NEW DEVELOPMENTS ON GAS COUNCIL STAND

'Service to Industry' is the theme of the Gas Council exhibit this year. It stresses the breadth and extent of the services which, through the Industrial Gas Development Committee and the industrial gas officers of the various gas boards, the industry can offer to all who have occasion to use gas in factories and workshops. Side by side with this are shown examples of the newest developments in the design of industrial gas appliances. Several of the exhibits in this section of the stand are production models which are being shown for the first time. A further section of the stand is devoted to demonstrations of how improvements in fuel economy and efficiency can be brought about by good design.

A model nitrogen generator, shown by the Incandescent Heat Co., Ltd., shows the relevance of town gas as a raw material in industrial protective atmospheres. Rodent or insect infestation in vaults, stores, bins or containers is impossible in an atmosphere of nitrogen. Used in food packaging or storage, it preserves taste, aroma and vitamin content over long periods. The cheapest and simplest method of preparing nitrogen is to burn town gas in a minimum supply of air which converts the oxygen to carbon dioixde. After condensation of water vapour, a high nitrogen gas is available.

The Incandescent Heat Co., Ltd., have also provided a very high temperature furnace for the stand. This is a furnace employing ceramic regenerators, which is designed to allow the working chamber of reasonable size to operate at temperatures of above 1,800°C. with rapid heating to this temperature. The furnace which also gives economical running costs is one of the first developments of its kind.

The 'Tamgas' 5C furnace is a production model of a furnace designed by the North Thames Gas Board and made under licence by the Incandescent Heat Co., Ltd. It is a simple low pressure, natural draft muffle furnace which operates economically at temperatures of approximately 1,450°C. It is designed so that these temperatures can be reached in a period of about four hours so that an operation can be carried out in a single shift or during one working day.

The 'Segas' ceramic kiln, which is being manufactured under licence by the Thermic Equipment and Engineering Co., Ltd., has a larger sill plate than usual which is at a convenient height for the operator; no back-firing from the burner is possible, nor is any fan or compressor required. Uniformity of temperature is ensured to within the critical limits by the system of firing. The kiln has been specially designed for use in studios, art schools and research establishments. The heavy insulating qualities of the kiln ensure excellent performance and it is both simple and safe to operate with the minimum of maintenance.

The precision burner exhibit on the stand is a collection of burners such as are used for operations requiring exact control. The burners range from those operating at low pressures through those using air/gas mixtures to those working at high pressures. All will be shown under working conditions.

A furnace pressure control demonstration will show the advantage of equipment of this type in minimising temperature drops and excess air when the furnace door has to be opened for the insertion or removal of work. The furnace is provided by the Incandescent Heat Co., Ltd., furnace pressure control is by the Electroflo Meters Co., Ltd., and the demonstration is fully instrumented. Flue gas CO_2 analysis is by Kelvin and Hughes (Industrial), Ltd., flue gas oxygen analysis by Geo. Kent, Ltd., and temperature measurement of the furnace chamber by Ether, Ltd.

A tank design demonstration shows the advantages of insulation and good design. It shows how a tank designed to operate satisfactorily but in an inferior way will have substantially greater heating and maintenance surface than one designed with good insulation. A similar demonstration shows the advantages of furnace design. This shows the importance of insulating refractories, particularly in batch furnaces where intermittent heating is required. It is shown that furnaces made of dense refractories take substantially longer to heat up and have appreciably higher gas rates than furnaces made of insulating refractories.

F. J. Ballard & Co., Ltd., show a small model, fully instrumented and automatically operated, camel-back forced convection conveyor oven which is used for operations where small components require finishing treatment.

The new Polford portable model drier has been manufactured by the Heaton Foundry Co., Ltd. The initial aim in the development of this unit was to eliminate the necessity for a hot air fan. It was also felt desirable that provision should be made for safeguarding against gas or electricity failure in view of the frequent operation of this type of equipment for long periods without attendance. The unit is primarily a refractory lined chamber in which gas from a 'Hypact' burner is burned in the large volume of air provided by an electrically operated fan mounted on top of the drier.

The air is controlled by a graduated butterfly valve which when in the 'Off' position allows a by-pass of air sufficient to ensure complete combustion of the maximum gas flow. The gas is governed by a standard gas governor, and a Perl No. 60 magnetic valve is fitted, the magnetic valve of which is activated by the electricity supplied to the fan motor, and if this fails, the gas supply is cut off. A Perl thermo-magnetic flame failure device is incorporated in the weep from the valve, and thus in the event of gas or electrical failure, gas is cut off and will remain so until the correct lighting-up procedure has been reinstituted.

Also shown is a small natural draught oven, thermostatically controlled, for the pre-heating of moulding powders. The advantage of this process is that the time involved in subsequent processes can be substantially reduced and the oven can be adapted for a variety of uses. The oven is manufactured by Stewart Gill & Co., Ltd. *Stand D.641 and 540.*

The Gas Council Coke Department's stand features the use of a specially designed industrial semi-producer furnace. Three applications of this furnace are shown: (1) A model of a brick tunnel drier, showing the method of installation of the furnace for the drying of clay bricks; (2) a small automatic rotary industrial drier, into which a specially adapted furnace has been fitted; (3) a scale sectional model of a lime kiln, which has been designed for the production of carbon dioxide for an industrial process. A gravity feed burner, with application to large central heating boilers, is also shown, and the stand includes a lounge where visitors to the Fair can discuss their problems and obtain information on the utilisation of gas coke. *Stand D.643.*

TRADE STANDS

Acme Wringers, Ltd., whose products surely need no introduction, are strongly represented, showing both hand-operated and power-operated domestic wringing machines. *Stand A.415.*

The Aerograph Co., Ltd., show a wide range of equipment for spray painting. Included among these DeVilbiss products are spray guns of various types, gravity feed guns, suction feed guns and

Showcases show a wide range of gas jets on the stand of Geo. Bray & Co., Ltd.

pressure feed guns, including the newly introduced type JGA spray gun, for which a new air cap and fluid tip combination No. 78 further increases the speed of the machine. Air compressors, pressure feed tanks and spray painting outfits are also shown. There are two new Aerograph brushes displayed—the A.54 and E.54—which boast smoother valve action, better balance and a larger flow of colour. *Stand D.509.*

Autocontrol Boilers, Ltd., display a 'Vertex' No. 2 gas-fired boiler, having a rated output of 160,000 B.Th.U. per hour, and the smaller 'Vertex' No. 0 gas-fired domestic supply boiler, suitable for output requirements of 50,000 B.Th.U. per hour, or raising 50 gal. of water 100°F. per hour. Both boilers are fully automatic in operation, and the casing of the No. 2 is finished in the standard mottled grey vitreous enamel, whilst the 'Vertex' No. 0 has the attractive mottled cream and black vitreous enamel finish introduced at last year's Fair. The 'Vertex' No. 3A, the new addition to the range of these boilers, is not available for display, but we are advised that plans for the production of this size boiler are now complete and the unit will be available for the coming heating season. With its output of 250,000 B.Th.U. per hour, the manufacturers state this boiler will meet the demand for a unit with an output midway between their present No. 3 and No. 4. *Stand A.600.*

Bratt Colbran, Ltd., exhibit a display of the company's well-known gas heating equipment. Several models of overhead radiant heaters are on show, from the 'Junior' for use in shops, offices and smaller buildings, to the large 'Senior' type intended for the heating of large buildings, factories, or semi-open workshops, etc. Industrial gas radiant units for use where rapid drying, stoving and finishing operations are required, may be built up to form ovens or tunnels to suit all shapes and sizes, and their simple design and low weight of 36 lb. enables oven and tunnel construction to be carried out quickly and easily. Among the advantages gained by their use are: (1) Handling costs reduced; (2) dust losses reduced; (3) minimum floor space required; (4) units emit convected heat as well as radiant heat, thus ensuring maximum efficiency, and increasing the range of articles to be treated. *Stand D.757 and 656.*

Geo. Bray & Co., Ltd. (Gas Jets Division) show their well-known range of gas jets and burners for domestic and industrial heating and lighting apparatus. These jets are mainly exported to meet the growing demand in countries which have natural gas. For butane/air Bray's are manufacturing a range of burners specially adapted for conversion of the domestic appliances; a range of burners for use with propane/air to meet the needs of European countries is also being produced. *Stand C.519 and 418.*

The British Vacuum Cleaner & Engineering Co., Ltd., show both domestic and industrial models. The latter include gas works models in the range of industrial cleaners, such as heavy duty portable flue cleaning plants designed primarily for Lancashire boiler cleaning and for other large flue type boilers and furnaces. 'Magneta' time recorders are also on show, including the 'Magneta' programme instrument for automatically sounding signals on a variety of sirens, bells, etc. *Stand C.313 and 212.*

The Brockhouse Heater Co., Ltd., has a display which is part of the 2,000 sq. ft. stand of the Brockhouse companies. Among the appliances shown are automatic solid fuel-fired boilers, 'Meldrum' oil-fired burners, both industrial and domestic, and the well-known Brockhouse gas-fired boilers for steam or hot water supplies. *Stand D.405 and 304.*

The Chemical & Insulating Co., Ltd., specialists in insulation, have an interesting stand displaying a wide variety of thermal insulation materials, including 'Dextramite' high temperature insulation, boiler-covering materials, 'Refrasil' lightweight insulation, etc. *Stand D.541 and 438.*

Robert Cort & Son, Ltd., exhibit a 'Super Spartan' heavy duty balanced reciprocating screening conveyor, comprising two trays horizontally supported by cast steel rocking links fitted with resilient brushes, between longitudinal side members forming the underframe. The trays have an opposed motion for balancing. A 'Cæsar' heavy duty single-deck balanced oscillating screen is shown, as well as an automatic coal screening, weighing and bagging unit and a variety of tar and liquor valves. *Stand D.437 and 336.*

Crane, Ltd., show a small selection of boilers and radiators, but the bulk of the stand is devoted to a wide range of valves and fittings for the control of liquids and gases. Industrial valves of gun metal, cast iron, and cast steel are included, ranging in size from the tiny one-eighth needle type to the 16-in. cast steel monsters. Prominently shown are the 'C' brand malleable iron pipe fittings with screwed taper thread to British and American dimensions. *Stand D.314.*

The Dunlop Rubber Co., Ltd. (General Rubber Goods Division) shows an impressive range of industrial rubber products, including belting, conveyor, transmission and V-belts, hoses, anti-corrosion and abrasion resisting linings, ebonites, rubber covered rollers, etc., a number of them having a direct bearing on gas industry requirements. *Stand D.623 and 522.*

Easiclene Porcelain-Enamel (1938), Ltd., show their 2 cu.ft. refrigerator, obtainable in white with black trimmings and white porcelain enamel working table top and interior. An alternative finish is in cream and pale green for the table top and interior. A new model washing machine is shown as well as the heavily featured new 'Regency' single drainer sink unit, and 'Princess' and 'Duchess' sink units, etc., are also shown. *Stand B.522.*

The Electric Construction Co., Ltd., show a wide range of electric equipment, including motors, alternators, generators, h.t. and l.t. switchgear, motor control gear, mercury arc and metal plate rectifiers, power transformers, the 'Varispeed' drive, and indicating instruments. *Stand C.708.*

Electromagnets, Ltd., exhibit an entirely new 'Select-o-Load' lifting magnet control system which, it is claimed, revolutionises the degree of control available over the amount of material picked up or dropped by a lifting magnet. It is available from 'zero' to 'full lift' without employing cumbersome, wasteful and unsatisfactory series resistances. This new system, to cite one application, is suited for cupola charging.

New exhibits include a powerful permanent magnetic floor sweeper of the discharging type which has a ground clearance of 2 in., a new high intensity permanent magnetic overband separator, and a patented permanent magnetic conveyor head unit of only 6 in. diameter, but possessing a separating power greater than a 14 in. diameter magnetic drum. *Stand C.650.*

Ether, Ltd., are specialists in temperature measurement and control and their exhibits reflect the progress which is being made in this field. In addition to the 'Ether-Wheelco' temperature controllers, the new Ether 'Wide-Strip' electronically operated potentiometer recorder is shown. Also making its first appearance is the 'Thermal-trol' electronically operated temperature controller, utilising the Wheatstone principle. A range of deflectional type temperature indicators and recorders including surface contact measuring instruments is exhibited, as well as the Ether range of solenoid and diaphragm operated control valves. *Stand C.700.*

Fisher & Ludlow, Ltd. (Materials Handling Division) show working exhibits of 'Flowline' belt conveyors, 'Flowlink' overhead and carousel conveyors, and 'Flowcline' press elevators. In addition, a full range of general storage equipment is shown. *Stand Outdoor 318.*

John Fowler & Co. (Leeds), Ltd., exhibit the well-known Fowler 'Challenger 4' diesel crawler tractor, with angle-dozing equipment. *Stand Outdoor 1336.*

John Harper & Co., Ltd., have what might be termed a 'before and after' stand, since it is divided into two main sections, one displaying Meehanite and Grey iron castings, and the other showing finished products. The latter section includes the well-known range of Harper domestic gas appliances such as the No. 87/2 gas ring, the O.K. iron, the No. 3177 griller hotplate, the No. 325 towel rail, the No. 4015 gas fire, and various radiators. *Stand A.336.*

The Harris Engineering Co., Ltd., specialists in heating equipment, show their range of gas unit heaters, direct and indirect fired, floor type plenum heaters, and gas radiant panel heaters, as well as heating appliances for operation on other fuels. Dust collecting equipment, ventilating fans and dehumidifiers are also represented. *Stand D444.*

G. A. Harvey & Co., (London), Ltd., display the enormous variety of 'Harco' woven wire cloth in all meshes and gauges for which they are justly famed; of particular note are the special quality wire screens used for vibrators. Sheet metalwork, gilled tubes, and components necessary in the fabrication of high pressure vessels and steel platework are represented, as well as the company's range of steel office furniture. *Stand G.36.*

Tube Bending Equipment

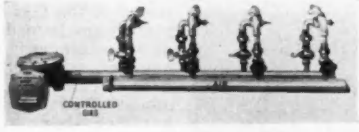
Hilmor, Ltd., are exhibiting a comprehensive range of hand operated, hydraulic, and motorised tube bending machinery. The range includes portable machines for the plumber, electrical contractor and gasfitter, general purpose machines for the allied engineering trades, and hand and power operated mandrel benders for the production of full bore bends without filling on extra short radii. An item of importance shown for the first time at the B.I.F. is the mandrel attachment for use with Hilmor bench model and portable machines to handle up to 2 in. dia. light gauge copper tube. The mandrel attachment is a simple but most efficient device to ensure the production unfilled, of completely full bore bends free from rippling, flattening and throating. It requires no skill in operation, and is used in conjunction with standard Formers and Guides already supplied with existing machines. This attachment, together with other machines, is demonstrated daily, and experienced operators are in attendance to give expert advice on all tube bending matters. *Stand D.147.*

Imperial Chemical Industries, Ltd. (Metals Division), concentate attention on a display of wrought titanium. I.C.I. are devoting £3½ mill. to building plants for the manufacture and processing of this metal. Apart from a general display of metal products in copper, aluminium and their alloys, there are special exhibits showing specific applications in the gas, building, transport and electrical industries. One section of the stand features numerous products of the Metals Division used in heat-exchange work. This will include examples of 'Integron' high fin and low fin tubing applicable to many forms of heat-exchange and, in particular, refrigeration condensers. *Stand D.409 and 308.*

Examples of components which can be handled by the Company's infra-red drying equipment is shown on the Parkinson and Cowan Industrial Products' stand.

C. H. Johnson (Machinery), Ltd. A considerable range of fixed and portable conveyors is represented on this stand, as well as examples of portable centrifugal pumps, air compressors, vibrators, pipe laying winches, power rammers, diesel dumpers, diaphragm pumps, etc. *Stand Outdoor 1339 and 1238.*

Keith Blackman, Ltd., have a 'live' demonstration of the remote and hand control of burners. This remote control has been developed for occasions where manual regulation of burners is desired over a considerable distance. Control over 250 ft. has already been installed, requiring no outside source of pressure. This apparatus is demonstrated in conjunction with the Type 3 mixture controller and is readily applicable to high pressure gas or air blast installations. Also 'live' is the use of a Type 3 Zero governor and a number of separate burners and injectors. This is possible with the Type 3 Zero governor by using the valve unit and Monitor governor and connecting the outlet to the gas supply of the injectors (air blast), a separate pipe being required for the air supply. A slight modification is required on the valve unit from that used in the controller and gas is accurately maintained at zero pressure. The high duty strip burner incorporated in these 'live' demonstrations in another recent development, being designed for flame retention with high/mixture pressures. *Stand D.521 and 418.*



Keith Blackman Type 3 Zero Governor.

The Kleen-e-ze Brush Co., Ltd., exhibit 'Kez-Strip' all-purpose brushware, condenser cleaning guns and brush-bullets, 'Florigene' dust-allaying fluid, industrial brushware, etc. *Stand D.231.*

James H. Lamont & Co., Ltd., show a range of copper pipe fittings with the well-known 'Securex' solderless compression joints. These are rust and fur proof and, it is claimed, will remain tight no matter what side pressures or variations in temperature occur. *Stand B.630.*

Metal Processes, Ltd., specialists in metal finishes, have a long row of tanks heated by gas rail burners and containing all their various dipping solutions, in order that visitors can carry out sample immersions of small metal plaques with the assistance of trained demonstrators. The principal exhibit is the chassis of a Cooper racing car; all Cooper cars are treated with 'Deruster,' which greatly enhances their life on the race track. *Stand D.229.*

Orme, Evans & Co., Ltd., exhibits an excellent range of gas cookers and fires, as well as metal presswork. *Stand D.405 and 304.*

Parkinson & Cowan, Industrial Products show an installation of 2 ft. diameter tunnel type units, making an oven 6 ft. in length, complete with Monorail conveyor mounted direct from the units. A plant of panel units is also shown consisting of 24 panel units, each 36 in. wide and 18 in. high. Typical examples of the components the plant can handle are displayed. Working models of wet type laboratory gas meters, rotary check meters and pressure gauges are included. *Stand D.440.*

Peckett & Sons, Ltd., have a fine photographic display of steam locomotives, designed to burn many types of fuel and built for all rail gauges and every type of industrial use. *Stand D.201 and 100.*

Radiation Group Sales, Ltd., are represented by products of the Belper, Birmingham, and Leeds Production Centres, all in the solid fuel field. Prominence is given to the 'Parkray' free-standing convector fire with back boiler which provides full heating for a big room (15 ft. by 13 ft. 6 in. by 9 ft.) by radiation from the open fire and the constant circulation of convected warm air throughout the room. By means of an adjustable flue throat restrictor the 'Parkray' retains in the room four-fifths of the heat normally lost up the chimney. Most of the smoke, which in an ordinary fire passes up the chimney and forms soot, is drawn down through the hot fuel bed and is consumed. The back boiler provides hot water for all normal family requirements, including baths, with enough to spare to heat a radiator and a towel rail. Whole House Warming is demonstrated by glass-sided gas and solid fuel units and a new oil-fired unit is included. The new 'Yorkist' No. 20 oven-over-fire grate is on show and the established range of cookers and heating stoves is included on the stand. *Stand B.501 and 400.*

The Rawlplug Co., Ltd., show their wide range of fixing devices and tools. Of special interest is a large demonstra-

tion unit showing some of the many applications for Rawlplugs from the tiny No. 3 (¼ in.) to No. 30 (1 in.) which will take a direct load of four tons. For demonstrations of hole boring and making fixings with Rawlplug tools and devices two special brick and concrete walls have been erected on the stand. These enable visitors to judge the merits of the respective demonstrations and also carry out tests themselves. Particularly noteworthy are the demonstrations of the masonry cutting speeds of the new 'Durium' drills. *Stand C.707.*

R. Russell & Sons, Ltd., makers of the well-known 'Dainty Minor' gas cooker, display its virtues on their pleasant stand. Specially designed for the small kitchen, this cooker has two boiling burners, griller, heat controller to oven and an attractive finish. *Stand A.327 and 226.*

Siebe, Gorman & Co., Ltd., exhibit many examples of their range of safety equipment, including self-contained breathing apparatus of both the oxygen and compressed air types, as well as short distance breathing apparatus and various types of gas and dust respirators. An interesting feature is an aluminium foil face mask which makes use of the property of this material in reflecting radiant heat. The replaceable windows are of mica and the mask can easily be attached to a fireman's helmet and can be worn with breathing apparatus. *Stand D.127.*

Sperryn & Co., Ltd., show their range of thermostatic controls to good effect. Included are 'Spersom' gas thermostats for both industrial and domestic use, relay valves, flame failure devices, spring-loaded and self-lubricating main cocks and a variety of small fittings. *Stand D.543.*

Stelcon (Industrial Floors), Ltd., have made the floor of their stand with 'Stelcon' anchor steel plates and steel clad flags. The structure of the stand incorporates the company's storage wall units which are widely used for storing such loose bulk materials as coal and coke. *Stand D. 423.*

The Wellington Tube Works, Ltd., show some interesting examples of tubular fabrications and the Company's Heater Department is this year exhibiting a 'Weldex' Type FH heat exchanger. The heat exchanger shown is one of a set of ethylene gas coolers designed and manufactured for duty as intercoolers and aftercoolers with a multi-stage gas compressor to be installed in a well-known chemical works; construction is generally in carbon steel with stainless steel tubes. This product is but one from an extensive range of heaters of capacities varying from small unit heaters to heavy duty plenum and process equipment, heat exchangers and coolers. *Stand C.300.*

Wellman Smith Owen Engineering Corporation. Ltd., show all the main models of Ross operating valves which are manufactured by Wellmans under licence from the Ross Operating Valve Company of America. The Ross valves are of the poppet type with oil resistance seats bonded in the seat discs, thus eliminating wasteful leakage of air and allowing rapid opening. Stems are self-aligning. *Stand D.626.*

Charles Winn & Co., Ltd., show valves and fittings for steam, water, oil, gas, chemicals, etc., for use in boilers, turbines, heating installations and gas works. Also shown is the Winn air eliminator for economisers and condensers *Stand D.747.*

The Yorkshire Copper Works, Ltd. have broken with tradition this year by having a single tier stand on top of which is mounted a bank of copper tubes ranging in sizes from 24 in. to 6 in. diameter. On the front and the sides of the main feature are mounted large coloured photographs of ships, power stations, oil refineries, refrigeration plant, etc., depicting the wide range of industries and trades which use 'Yorkshire' non-ferrous tubes and 'Yorkshire' fittings. At the rear of the stand are six interesting panels which deal respectively with (a) waste installations, (b) heating and large size pipelines, (c) gas, services, carcassing and installation pipelines, (d) underground water pipelines, (e) bottled gas, general engineering, refrigeration and low pressure steam services and (f) hot and cold water services, together with large photographs showing panel heating installations and a further four panels devoted to (a) stopcocks and valves, (b) union fittings, slip fittings, clips and brackets, (c) chromium plated tubes and fittings and (d) high duty fittings. Special displays arranged round the perimeter of the stand are representative of the diverse range of products manufactured by 'Yorkshire,' and a special display cabinet arranged on the front of the stand shows typical examples of the corrosion of non-ferrous tubes. *Stand B.723 and 634.*

THE TECHNIQUE OF WELDING

We have received from the British Welding Research Association a copy of the latest edition to the Association's series of technique booklets, Ref. T.30, 'Projection Welding of Mild Steel.' Prepared by a Committee of the Association composed of resistance welding experts from the industry of Great Britain, this informative booklet covers all aspects of projection welding and is the first available in Great Britain which deals solely with this subject.

Recommendations are made to cover machines and electrodes, materials to be used, types of projections, and machine settings for various thicknesses of material. All are prepared from a series of extensive researches conducted by B.W.R.A. during the past five or six years. The booklet concludes with a section on suggested practices for projection welding based on present industrial experience. Fourteen pages with 11 illustrations and many tables. Size 8½ in. by 5½ in., price 3s. 6d. British Welding Research Association, 29, Park Crescent, London, W.1.

CONFERENCE OF DISTRIBUTORS

For one week, from May 29 to June 6, nearly 100 overseas distributors and sales agents will attend a World Conference at Harrogate, organised by Steels Engineering Products, Ltd., of Sunderland. The company, which manufacture Coles mobile cranes, electric trucks and hoists, has booked the Prince of Wales Hotel, where delegates will be accommodated and the business sessions held.

The programme for the week includes films and demonstrations of all Coles equipment, lectures on materials handling, crane selling technique, and future trends in design. Speakers will include several senior executives of the company and a number of users will speak on 'Why I use Coles,' with particular application to their own industry. In this novel series the industries covered will include timber, shipbuilding, railways, coal mining, iron and steel making, constructional engineering, and the oil industry. There will be free discussion on all sales and service topics, and a number of recreational activities have been arranged.

The aim of the conference is to bring closer together those responsible for designing and building mechanical handling plant and those who sell these British products abroad.

ATOMIC ENERGY PLANT EXHIBITION

The North American Aviation Company will place on display, at the Instrument Society of America's forthcoming First International Instrument Congress and Exposition, a scale model of an atomic pilot plant. The exhibition will be held in the Philadelphia Convention Hall from September 15 to 21. North American has designed an atomic power generator and is prepared to build a pilot plant for $10 mill. to demonstrate and study the production of electrical power for industrial uses. The proposed pilot plant will generate about 8,000 kW of electrical power, enough to suply 2,000 average homes with electricity.

STREET LIGHTING CHARGES

The North Western Gas Board proposes to introduce from July 1 a new system of estimating the therms used for street lighting. For Liverpool Corporation this will increase the present bill by £10,792 a year. The Board's decision was intimated to the Gas Consultative Council. The Council did not express any immediate views on the change, because no actual data concerning it were laid before them. The members will, however, convey the news to their various authorities. The basis of charge will, for the first time, give local authorities the option of paying on an estimated block basis, as now, or on a sliding scale. The present general charge is 1s. 1½d. per therm. Some authorities may save a little; but, whatever happens, charges to Liverpool will go up considerably.

HALDANE ESSAY COMPETITION

The Institute of Public Administration announces that for the year 1954 the prize for the Haldane Essay Competition will be increased to £50 in addition to the Haldane Silver Medal. It is hoped that the larger prize will encourage more serious contributions to the study of public administration. Additional monetary awards will be made if, in the opinion of the judges, other contributions are of outstanding merit. The competition is open to all present and past members of the public services throughout the Commonwealth. Full details may be obtained in a leaflet from the Institute at Haldane House, 76a, New Cavendish Street, London, W.1.

PORTSLADE OPENING

MAY 3,

After the official opening of the new Woodall-Duckham vertical retort plant at the South Eastern Gas Board's Portslade Works, by the Duke of Norfolk, K.G., it was stated that the plant had more than achieved the hopes of those responsible for its design.

The lunch took place at the Grand Hotel, Brighton, after the ceremony and the party included Sir Henry Self (Deputy Chairman of the British Electrical Authority); Mr. C. R. M. Croft (General Manager of the Sussex Division, S.E.G.B.); Mr. Anthony Marlowe, Q.C. (M.P. for Hove); Captain Henry Kerby (M.P. for Shoreham and Arundel); Mr. R. Prince (Chief Engineer, S.E.G.B.); the Mayor of Brighton, Alderman J. E. Hay, and the Mayor of Hove, Councillor A. E. Brocke.

Mr. W. K. Hutchison (Chairman, S.E.G.B.) met the Duke of Norfolk, who opened the gates with a gilt key, after being introduced to members of the Board. He then performed the opening ceremony inside the retort house.

Mr. Hutchison, at the lunch, said that it was only by using the most efficient plant and by getting the raw materials as cheaply as possible that we could hope to offset the many costs forced upon us in the years since nationalisation first came in. The whole object behind the new works was to get more gas from less coal and eventually to keep down the cost of gas to the householder. By using the modern vertical retort system, up to date equipment, and by having the works loading coal directly from the sea, administrative costs were greatly reduced. A great deal of thought had been given to the plant's appearance and he hoped they had produced something which blended with its surroundings. He then presented a duplicate key to the Duke of Norfolk, as a memento.

The Duke, replying, said the plant had been described to him as 'the most magnificent thing in the gas industry.' He wished them every success in their new venture, and said he would let people know what 'very efficient and competent people you are.'

The Hon. L. W. Joynson-Hicks (Parliamentary Secretary to the Ministry of Fuel and Power) said that the plant was a very great credit not only to the South Eastern Gas Board but to the industry as a whole.

Colonel Sir Harold Smith wound up the proceedings by saying that there was no more economical way of producing gas from coal than the way which had been seen at Portslade.

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Photographs

Top.—The Duke of Norfolk, K.G., Mr. W. K. Hutchison (Chairman, South Eastern Gas Board), and Mr. J. H. Shadbolt (Station Engineer, Portslade).

Centre.—The Duke of Norfolk, K.G., being introduced to: Left to right, A. L. J. Brett (Operating Engineer, Woodall-Duckham Construction Co., Ltd.), A. H. Baker (Site Representative, Woodall-Duckham Construction Co., Ltd.), J. H. Shadbolt (Station Engineer, Portslade), J. H. Carrington (Works Chemist, Portslade), H. V. Corfield (formerly of Portslade), J. T. Veryard (Div. Chemist, Sussex), J. M. Webber (Div. Engineer, Sussex).

Bottom.—The Hon. L. W. Joynson-Hicks (Parliamentary Secretary, Ministry of Fuel and Power), Colonel Sir Harold Smith (Chairman, Gas Council), The Duke of Norfolk, K.G., Mr. W. K. Hutchison (Chairman, South Eastern Gas Board), Mr. J. H. Shadbolt (Station Engineer, Portslade).

THE COKE POSITION IN THE EAST MIDLANDS

FROM A PAPER TO EAST MIDLANDS GAS BOARD STAFF CONFERENCE AT SKEGNESS ON APRIL 30, 1954, BY

J. B. LEAMAN,

Coke Marketing Officer and Deputy Coal and By-products Officer, East Midlands Gas Board.

In 1949-50, total sales of coke in the area of the East Midlands Gas Board amounted to approximately 516,000 tons, and in the year just ended to some 656,000 tons, showing an increase of 27%. As the stocks are now comparable with those held at vesting date, we have, therefore, been able to sell all the available production. It is significant, however, that during the four years for which detailed records are available, the increase in sales within the Board's area has only been 6%; and to keep stocks within reasonable bounds we have grown more and more dependent upon our external markets. Thus, our disposals to other gas boards rose from 28,000 tons in 1950-51 to 77,000 tons in 1953-54, and exports abroad from 14,000 tons to 31,000 tons in the same years. This is a reflection on our capabilities, particularly when it is known that one gas board in the South has more than doubled its sale of coke for use on the open fire during the same period. It is essential that we should find the reasons for and seek to remedy our particular situation.

In this country the householder heats his home by burning coal in an open domestic fire. This preference is much more dominant in the Midlands and the North than in the South, for the simple reason that the northern half of the country is, generally speaking, a house coal production area, and the coal sells at prices up to £1 per ton less than the price at which we are able to offer domestic coke for the same job. In the South the differential in price between gas coke and the standard quality of house coal is very much less, and sales of coke for domestic purposes are, in consequence, more readily effected than in other parts of the country. Of course, the relation of coke prices to coal prices is not the whole story.

Much of the credit for the development of coke sales in the South is due to the orderly marketing arrangements which have existed in the area covered by the London and Counties Coke Division for the past 23 years. These arrangements include the sale of coke at destination-delivered prices which have facilitated the movement of coke into areas lacking local supplies. Without these arrangements it is inevitable that those districts short of coke would have continued so in spite of distant undertakings having surpluses.

In the Midlands, we have enjoyed marketing arrangements rather similar to those in the South, though we freely admit that the experience of orderly coke marketing there is much longer than ours, and the relations and working arrangements between the gas boards in the South and their distributors are much closer than we have so far been able to achieve. However, though during the last four years the sales increase within our area is only modest, I am certain that we would actually have lost ground had we failed to sell at destination-delivered prices.

Sales to Distributors

While uniform delivered prices are of benefit to the consumer, I do not feel that this system in itself has been responsible for building-up the coke market in the South to its present level. One of the most important factors has been the payment of margins to the distributor comparable with those received for the sale of house coal. This has resulted in a steady rise in sales through the distributive trade without any reduction in the boards' own direct-to-consumer sales.

Turning to our own area, only about half the registered coal merchants handle gas coke, because the margin which they receive for its sale is substantially lower than on coal. Even so, our disposals to distributors have advanced since vesting date, though some of the increased trade has been at the expense of the Board's direct business. We shall not succeed in persuading the merchant to make any real endeavour on our behalf until there is a marked improvement in his margin for distribution. I do not imply that we should surrender to the merchant our remaining direct business. The evidence is sufficiently strong, however, to demonstrate the influence which the distributors have upon the sale of coke; and I am satisfied that any attempt to increase direct sales by retarding the progress of the merchants is not in our best interests.

Our principal concern now is to determine what further steps must be taken to develop fully our own natural coke markets. Firstly, we must sell coke at a price competitive with house coal or attain a quality standard which will allow coke to command a higher price than coal. Secondly, we must give the best service to all customers, in regard to both delivery and technical advice. Thirdly, we must encourage the distributive trade to work in close co-operation with us. Fourthly, we must ensure that we put the 'coke story' over to the public constantly and effectively.

The Economic Position

Regarding the price of coke in relation to coal, we are at a distinct disadvantage in those parts of the area which lie within the National Coal Board's land-sale zones where, by 1960, the Board will be producing a further 160,000 tons of coke for sale annually. In these zones the price of house coal is up to 1s. per cwt. lower than domestic coke; and as it is obviously in our interests to develop markets near to the point of production, we must improve and maintain the quality of coke to offset this price differential.

In the first year of the Board's operations, the gross income from the sale of coke and breeze was approximately £2.23 mill., in 1950-51 it was £2.65 mill., in 1951-52 £3.16 mill., in 1952-53 £3.37 mill., and in 1953-54 £3.5 mill. (estimated). From these figures it can be calculated that since vesting date coke has made the following increasing contributions towards the costs of gas manufacture:—

1949-50	—	4.42d.	per therm of gas made.
1950-51	—	4.62d.	" " " " "
1951-52	—	5.20d.	" " " " "
1952-53	—	5.38d.	" " " " "
1953-54	—	5.70d.	" " " " "

In other words, without this revenue from coke the price of gas would have had to be increased to a level at which the prospects of gas sales would be materially reduced.

Herein, therefore, lies the importance of coke and there can be only one possible course of action open to us. We must command a level of income from the sale of coke which will enable the price of gas to be kept competitive. To accomplish this we must produce and prepare coke which can be used with markedly greater efficiency than coal. We must also see that it is used by our customers to their best advantage.

Coke Preparation

One of the main aspects of the quality problem lies in the ash and shale content of the coals supplied to us. In this matter we are in the hands of the National Coal Board. The Board has its difficulties. At the same time we must not overlook our responsibilities to the customers of the East Midlands Gas Board. At Headquarters we receive regular analyses of most of our coals and a constant check is maintained by the coal and by-products department. We have not hesitated to reject those coals regarded as unsuitable. There is, however, far too much free shale present in some coals today; and even a sporadic delivery of coke containing bats has a damning effect on marketing.

Much has been done to improve the screening of coke to the sizes recommended by the Institution of Gas Engineers, but we have not achieved all we could have in this respect. In many instances, screening efficiency leaves

Councillor Mrs. E. Barratt, M.B.E., Chairman of the Skegness U.D.C. 'I am not a speechmaker, but I can talk,' she told the Conference.

Mr. Sydney Smith (Chairman), on the right, welcomes Mr. R. M. Stevenson, newly-appointed part-time member of the Board.

much to be desired. The Coke Sizing Survey published in October, 1951, by the Gas Council Coke Technical Committee made the following recommendations in regard to average sizing analysis, and these have been accepted by all boards as a necessary standard:

(i) *No.* 1 (*Large Coke*): Not less than 60% over 1¼ in. sq. mesh.

(ii) *No.* 2 (*Broken Coke*): Not less than 85% through 2 in. and over 1 in. sq. mesh.

(iii) *No.* 3 (*Coke Nuts*): Not less than 90% through 1¼ in. and over ½ in. square mesh.

The inefficient screening of large coke is a national problem, and a great deal of thought and energy is being directed to its solution in many quarters. So far as our area is concerned, there is an excessive amount of undersize in much of the large coke we produce; and as we have a deficiency of No. 2 coke it would be very useful if this undersize in No. 1 coke could be reclaimed. During the last half of the winter period just ended, the demand for No. 2 vertical coke was very high indeed—at the peak period considerably in excess of available supplies. On the other hand, supplies of large coke were more than adequate to meet all requirements. The demand for No. 2 size is increasing year by year as the use of coke on the open fire grows in popularity. In the case of both Nos. 2 and 3 cokes, screening efficiency is generally good, but in some instances the proportion between 1 in. and 2 in. is as low as 68% in the No. 2 size. Because of its small fuel capacity, the domestic open fire requires a closely graded coke, and a total undersize of the order of 32% is a serious drawback to the efficient utilisation of coke on these appliances.

The moisture content of coke also requires to be carefully controlled. A content of 5% to 6% can be regarded as a satisfactory figure.

As far as is practicable, only screened and graded coke should be placed into stock at those works which have screening plants. Coke must be stocked on a firm, prepared site, with each size effectively segregated. Facilities for reclaiming, debreezing, and expeditious loading are

Major-General Sir Noel G. Holmes, Chairman of the North Eastern Division of the National Coal Board (left) makes the coal situation perfectly plain to Mr. E. H. Harman, Deputy Chairman, E.M.G.B.

Below, Mr. W. R. Branson has a final word before leaving to take up his duties as Deputy Chairman, West Midlands Gas Board.

essential. We must provide for easy access to and from the stocking ground for road vehicles, adequate weighing facilities, and, where appropriate, for the rapid loading and despatching of railway wagons. Of course it is desirable that customers should stock coke during the summer months. However, due to restricted storage facilities, many domestic users are incapable of stocking more than a few hundredweights at a time. We must face the necessity of putting into stock during the summer months sufficient coke to meet any anticipated excess of winter sales over production.

Since the Board started operations, the quantity of coke stocked during the summer periods has, with the exception of 1951, been the natural surplus of production over sales rather than a pre-determined figure. In future we shall have to consider our stocking programme in the light of the following possibilities:—

(i) That we shall achieve a progressive increase in sales within the area which will entail a corresponding reduction in our external trade.

(ii) That there is likely to be a substantial increase in domestic usage within the area, again with a decrease in the quantity sold to larger consumers.

Based on existing markets, the demand for coke in the summer amounts to approximately 38% of the annual disposal, while production during the same period amounts to 44% of the annual total. The transition to a predominantly domestic trade will inevitably alter the ratio of summer to winter sales to perhaps 30:70. The stock target may well need to be 14% of the annual sales; and after taking into account the quantity required in the winter months for carburetted water gas and other internal purposes, this stock requirement may be increased to some 20%. By 1960 this will represent approximately 160,000 tons, which is more than twice the maximum stock ever held by the Board.

It is the Board's policy to operate as a two-fuel industry giving a complete heat service by both gas and coke. District representatives will have the added responsibility of furthering the sale of coke to domestic consumers. This necessitates more training in coke utilisation. To this end, both showroom staff and district representatives are receiving instruction in coke matters at the Long Eaton Training Centre, while selected personnel are sent to the admirable coke courses at Watson House from time to time. In this manner we are equipping our district representatives technically to carry out their new duties effectively. It is also our purpose to inspire in them the pre-war conception of salesmanship. However, it is not intended that they should act primarily as collecting agents for coke orders. We shall expect them to sell coke appliances and obtain the initial order for coke. They will follow up these initial deliveries to give advice and generally to assist the new customer to obtain the best service from both the appliance fitted and the coke supplied.

New Price Structure for Coke

We are progressing rapidly to the adoption of a new coke marketing scheme and price structure for the area, one of the conditions of which is the provision of technical service by selected distributors. I am confident that in this way we shall awaken a coke-consciousness in the minds of the public.

Under the E.M.G.B. scheme, the principle of selling coke at destination-delivered prices, irrespective of the point of production, will be continued. A reversion to the system of ex-works price plus transportation cost would be a serious bar to the sale of coke. The scheme is designed to eliminate the difficulties with which we are at present beset through the anomalous and varied prices operating in nearly every town and village throughout the area. In their place the area will be divided into four zones, within each of which a uniform scale of prices will apply.

With the object of encouraging the distributive trade to a better co-operation with us in the sale of coke, we have set out to improve merchants' margins. In addition, we shall appoint selected merchants into one of two classes of authorised distributors. In return for payment they will be expected to provide their customers with specified technical and other services. These merchants will also be expected to hold reasonable buffer stocks for meeting peak demands and to participate in the Board's sales and publicity campaigns.

Future Trends

It is estimated that in the E.M.G.B. area the coke availability will increase to something like 800,000 tons by 1960 and that production will continue to rise after that date. Our task is to develop a market within our area which will absorb an additional 250,000 tons annually. Production will be concentrated at a comparatively few undertakings in place of the existing 61.

At the moment we occupy a favourable position. Our gas production points are numerous, widely dispersed, and relatively close to the consumer. We shall lose this advantage when coke production becomes more centralised. The Board may, in the future, have to undertake the bulk movement of coke by rail over much greater distances than hitherto. Naturally, this will involve additional transport charges, which must be offset against the financial benefits to be derived from the integration of gas supplies.

Concurrently with our own developments, the National Coal Board is building plant to produce an additional 500,000 tons of oven coke annually in the East Midlands by 1956.

It may well be that market development can best be achieved by some form of joint arrangement between the N.C.B. and the Gas Council. And joint coke advertising should prove advantageous. Why should it not be possible to develop jointly modern coke depots at strategic points?

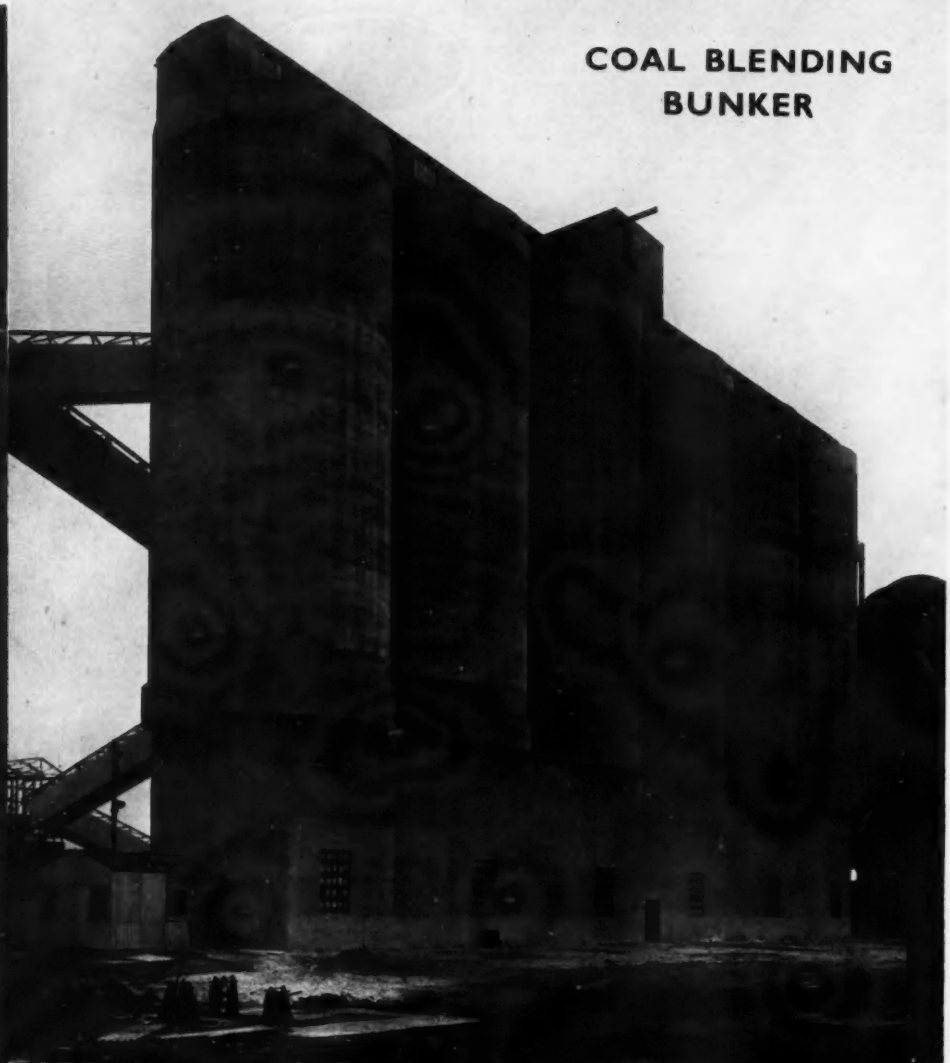
DISCUSSION

The **Chairman** (Mr. Sydney Smith) emphasised that the gas industry was a two-fuel industry and must continue to pursue that policy in the future; and with the backing of the Beaver Committee there was now opportunity to go into the markets for smokeless fuels.

Dr. **M. Barash** (Headquarters, E.M.G.B.) said the matter of ash and shale in coal was a question in which they were all interested. They had good relations with the National Coal Board and were fortunate in the East Midlands area in being served by two very good Coal Divisions with a large variety of coals—good, bad, and indifferent. They took quite a large proportion of good coals. Some of the bad coals were not inherently bad, in the sense that a large percentage of the content was ash, but in some coals there was 20% to 30% of foreign matter—shale, bats, etc.—and it was the onerous task of the Coal Board to sell that coal. To a large extent it was good caking coal, and the Coal Board did its best to remove the impurities to as great a degree as possible.

Results of analyses which came into his office at the rate of about 2,000 a year showed that the average ash content of all consignments of coal for the year was approximately 5%. If they could be assured of coal of a regular standard of 5% ash content they would be very happy to sell the resultant coke containing something like 7% to 8% of ash. In perhaps 98% to 99% of cases that was the standard being produced, but the trouble was that the cleaning of the coal depended to a large extent on the human element.

Much money was being spent on publicising coke and persuading consumers to use coke, yet a considerable amount of harm was done by the odd delivery containing a large amount of ash. It would be a very expensive undertaking to wash their own coals. The best they could do would be to inform consumers when they knew that a bad delivery was inevitable. Another point he wanted to refer to was the coal/coke price ratio; and here again they were faced with an awkward predicament. Over and over again the public asked why it was that, after taking gas and other products out of coal, the gas industry sought to sell coke at a higher price than the original coal. There were three good reasons which might be useful to district representatives. In the first place, as a manufactured product, coke must obviously be more expensive than the raw material from which it came. A more important argument was that the domestic consumer who took coke in place of coal received a much better fuel, and more worth the money paid for it than coal. Coal when it went into the fire contained 60% of carbon and 30% of volatile matter, only a small proportion of which was used in the fire, a large proportion going up the chimney as waste. The carbon in coke was 90% against the 60% in coal. The third argument in favour of coke was a very simple



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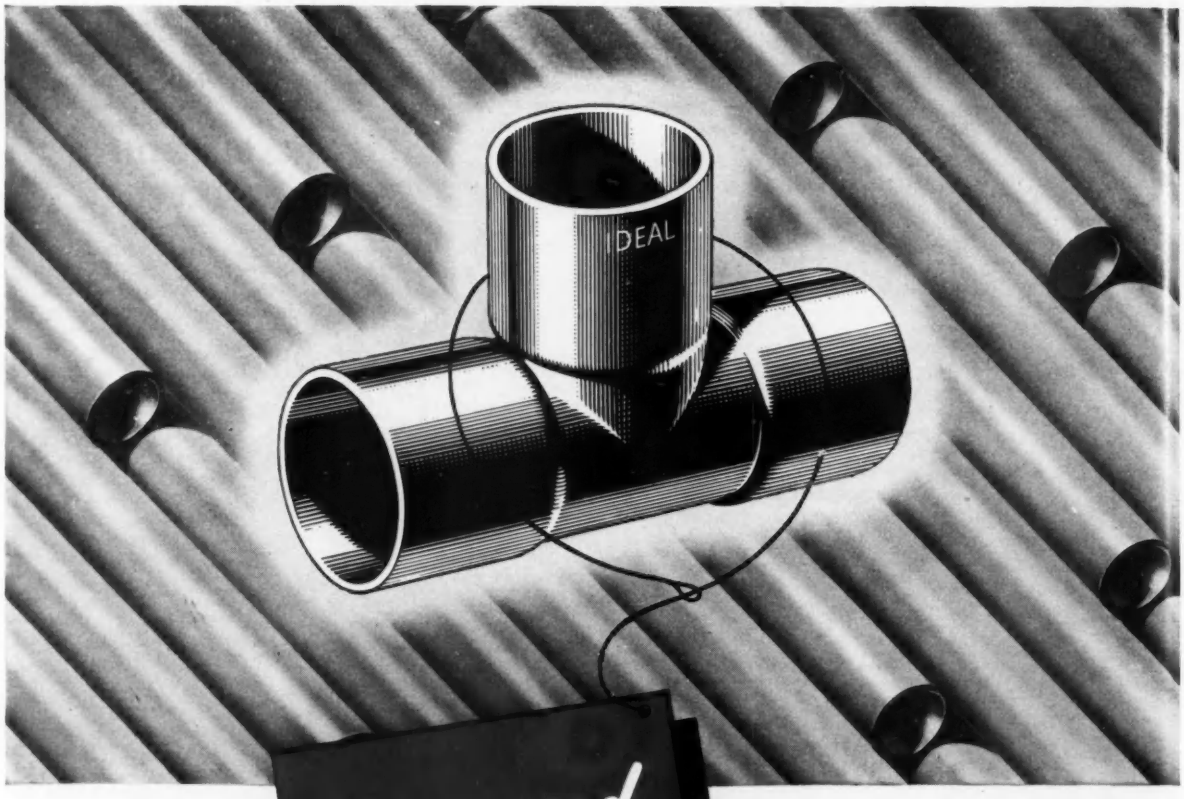

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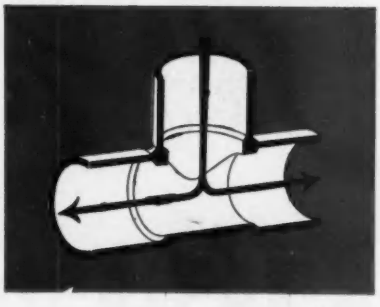

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ne—namely, that they had to balance their budget. They ad to pay for the coal and the labour involved in produc- g gas and coke. Other by-products represented only a small roportion of the income, and the costs must therefore be net either by charging what might be regarded as an exces- ive price for gas or by charging a fair price for coke.

Merchants' Margins

Mr. **S. A. Riley** (Nottingham) stressed the point made by Mr. Leaman in his paper that an important factor in retarding oke sales through distributors was that their margins in espect of coke were less favourable than those in respect of oal. In the days of the former Midland Counties Coke Association, efforts were made to arrive at an equitable nargin for the merchants, but those efforts did not fructify, nd there was a lack of interest on the part of some of the nerchants. In pre-vesting days some of the producers thought hey could market their own coke through their own organisa- ion, but there was a need today to encourage the merchants o work with them. There was a growing faith in coke and t had been more pronounced since nationalisation. He elieved it would be extended further by the new margins nder the price structure. It must not be forgotten that the gas industry had only one solid fuel to offer to the consumer, whereas the coal merchant had several and would naturally sell those that were most advantageous to himself.

In regard to coke preparation they still had complaints in Nottingham despite careful supervision, and he was in the unfortunate position of having to interview some of the people who brought along bucketsful of shale and asked 'What are you going to do about it?' The percentage of shale in most coals might not be high, but it was highest in No. 3; there was some in No. 2, and very little in No. 1a. Could anything be done to equalise the content as between the various sizes?

Mr. **Leaman** agreed that it was a fact that margins had detracted from the sale of coke by the distributors. In the new marketing scheme they were trying to make the selling of coke more attractive to the merchants. While he could not give figures he thought he could say that they were trying to increase the margins on coke to bring them into line with those which the merchants received on coal.

Mr. **A. C. Jennings** (Derby) said Mr. Leaman had given a most welcome paper revealing the overall position of coke. It was most important to secure regular deliveries of coke in the domestic market. In his view it was important to give technical service to the consumer. At present they were not giving anything like the same technical service as in the case of gas. One of the things they did not appreciate was that it took a lot more technique to burn coke in the domestic grate, and he suggested three specific ways in which such service ought to be given. First, service to the domestic consumer; second, service to the merchant, making sure that he passed such service on to the consumer; and, thirdly, specialised service to the industrial and commercial consumer.

They were reminded by Mr. Leaman that they would have to consider their stocking programme in the light of the possibility that they would achieve a progressive increase in sales within the area which would entail a corresponding reduction in their external trade. None of them would disagree with that as a long-term policy, but in the light of production figures it would seem that while building-up their sales within the area they must not neglect their external trade, which they would need for some years. The author had mentioned that there was likely to be a substantial increase in domestic usage within the area, again with a decrease in the quantity sold to larger consumers. He took exception to that statement. Although they might increase the domestic use of coke in the area there was a great possibility of extended use in industry and commerce, in connection with which he mentioned the Bigwood down-jet burner, in which controlled conditions had been achieved to a greater extent than ever before. Coke sales for industrial usage might well be one of their chief factors in the competition against low-priced oil fuel.

Mr. **Leaman** said he would like to commend Mr. Jennings's remarks on continued industrial sales. It must be realised that in the East Midlands the industrial market was very vulnerable, particularly in regard to comparisons with prices which the Coal Board was able to offer for cheap fuels such as washed singles, dry cleaned slacks, etc. They knew coke was much more efficient, but the great difference in price range did not make it a paying proposition. It was recognised not only by the E.M.G.B., but by the gas industry as a whole that the future lay in the domestic market, and it was possible that with the implementation of the Beaver report they would be short of coke to meet the domestic market, and would not therefore ultimately be able to fill both the domestic and the industrial markets.

Mr. **D. W. Ault** (Lincoln) referred to merchants' stocks, and said that with modern coke plants they were producing coke well within the specification Mr. Leaman had laid down. At Lincoln they marketed a large amount of coke through merchants who took it away in bulk, and he had a feeling that they were losing some of the benefit of the careful screening carried out on the works. He wondered whether it was the view of the author that they should press the merchants to do some form of de-breezing after storing the coke. He also wondered why Mr. Leaman had included in his paper a series of figures showing the increasing contribution which coke had made to the price of gas. He did not suggest that he was deliberately trying to mislead them, but he thought he was making use of true statements and asking them to draw false conclusions. It appeared to him that while the price of gas had risen by some 40% the price of coke sold had gone up by only 13% and was therefore not paying its full share of the increased cost.

Mr. **Leaman** said he agreed that the merchants should do some de-breezing in their own yards. One point they should consider when they were appointing their authorised dealers under the new scheme was the question of the screening of coke; another point was the question of the service that merchants should give to the Board and to the consumer. They should deliver to the consumer coke that was clean and as dry as possible. The reason he had mentioned the

A few of the principal officers, members of the Gas Consultative Council, and visitors in the Conference room.

stocking of unscreened coke was that it had been put to him that it was doubtful whether any benefit was to be gained if, in any case, they had adequate facilities for reclaiming the coke from stock and screening it. The reason he had touched on revenue was to focus attention on the fact that coke was an important part of the Board's business, and that the Board was receiving about £3¼ mill. a year from coke, which, as he had pointed out in the paper, represented 5.7d. per therm of gas made.

The **Chairman** pointed out that the price of coke had gone up by rather more than had been indicated by Mr. Ault, and he suggested that he should re-examine the price of coke on vesting day.

Mr. **W. R. Branson** (Headquarters), who has since taken up his duties as Deputy Chairman, West Midlands Gas Board, said he was inclined to agree that it was not sound economics to design a screening plant suitable for dealing with maximum coke production; it was likely to lead to excessive capital charges. They should have plant to deal with maximum daily make. Screened coke should be stocked and re-screened for loading. Gas and coke were true twins, born simultaneously in the retort house, and if they were to sell coke they needed to keep the twins together. In 80% to 90% of new houses they were getting gas cooking points, but not enough gas points at the fireplace. They could not sell coke if they had not gas ignition, and that was one of the points to which they must give increasing attention.

CINDERS AND THE PRESS

Sir Harold Smith addresses the Advertising Association

'The Press has sometimes referred to the gas industry as the "Cinderella" of the fuel industries. That rather pleases us. Cinderella, you will remember, was a hard worker and a willing one. She always got the rough end of the stick. She had to compete with two ugly sisters, but she got the Prince in the end.' Colonel Sir Harold Smith, Chairman of the Gas Council, told this to the Advertising Association's 21st annual conference at Bournemouth on May 7.

He was concluding his address entitled 'A Nationalised Industry Looks at Publicity,' in which he confessed that in his early days as an engineer he was inclined to look upon advertising with suspicion. A good, sound job of work, his opinion was then, should speak for itself. Sir Harold and his contemporaries had all held the lofty view that their work needed no 'puffing' in the daily Press or elsewhere. Indeed, if a product had to be advertised they felt there might even be something wrong with it.

Press Relations

After briefly explaining to the Advertising Association the structure of the industry, Sir Harold showed his appreciation of the advertising value—adverse or otherwise—of Press reportage. Experience showed, he said, that a state-owned industry like the gas industry must expect to work more under the public eye and for that reason to have its activities far more subject to public notice and comment. 'We accept this and are prepared at all times to stand up to constructive criticism. All we ask is that we should be judged on the merits or demerits of the services we afford.' Then came Sir Harold's only criticism of the Press: 'It is, of course, of prime importance that we establish good relations with the Press. It may be that the Press does not always represent what we may think to be facts and a true story in the manner in which we would like to see them represented.

'It may surprise us to find that other people can view what we think to be clear in quite a different way from ourselves. If that happens we have to ask ourselves whether we have always given a clear and complete story to the Press.' The gas industry, he maintained, had some good stories to tell now, perhaps more than ever before.

Public Relations

Sir Harold said he thought the idea—not held by the advertising profession—that competition between nationalised industries was a waste of money and that publicity was unnecessary, was both uninformed and mistaken. So far from enjoying a monopoly, the gas industry was in competition with all the other fuel and power industries. He added: 'I believe it to be our duty to maintain a comprehensive public relations service for the benefit of our consumers in particular and the community in general. We must keep the public informed of the particular qualities of our products, of the ways in which they can be used most efficiently and of the facilities offered for their acquisition. Research and technical development teams are continually working for the improvement of the services offered to our consumers. If we did not make the public aware of the improvements achieved we should be failing in our duty.'

The Post Office, he said, which was the nearest of all the state-owned industries to a monopoly, expended money on various forms of publicity in order to keep the public up to date with the latest developments in its services. It was worth remembering, too, that the Ridley Committee Report put forward the view that competition between the nationalised industries, if not carried to uneconomic lengths, would be in the country's interest.

Particularising, Sir Harold said the gas industry was no novice in the field of publicity. 'In fact it can claim to be the pioneer in co-operative commercial advertising.' In 1911, the late Sir Francis Goodenough persuaded individual gas undertakings to embark on advertising on a co-operative basis. The British Commercial Gas Association, was the first national body of its kind to be set up in any country in the world and since its birth many other industries had followed this lead and instituted publicity organisations built on a co-operative foundation.

Sir Harold concluded with short references to public relations with area gas boards, coal usage, and publicity with regard to its research.

MORE ABOUT KNOWLEDGE

(*Continued from p. 311*)

This is the final instalment of the Presidential Address of H. Johnston, O.B.E. to the Manchester District Section of the Institution of Gas Engineers.

Apart from price considerations, coke users will insist on properly graded coke, low in ash, low in moisture, and of improved quality. It must be marketed as a refined fuel, such that it has a full demand in its own right, and not as something to replace another fuel in short supply. The advantages of this, both economic and otherwise, is patent to all; and no effort or expense should be spared to effect means of controlling the quality and behaviour of coke and releasing only the best coke for the consumer market. It is necessary that this fuel should have a minimum of extraneous matter, be of reliable graded size and clean; and until grading plants of the highest possible efficiency and effectiveness are universally installed for this purpose, so will the competitive position of coke in regard to other fuels remain weakened.

Better distribution of gas and improved appliances for utilisation deserve all the concentrated thought and effort the industry and its allied industries can give. Generally service is an avenue for advancement as wide and important as others, and equally so demands research, and the use of all the techniques and equipment available, with expert knowledge and application.

Reducing the Cost

In regard to the application of means available for reducing costs, anywhere in the chain of activity—production, distribution, sales and service, accounts—to provide users and potential users with a most desirable service at affordable and competitive cost, the problem is tripartite. Firstly, improved processing, distribution and utilisation efficiency—*i.e.*, the use of less raw material to provide the same effective heat service. Secondly, there is the matter of so choosing, using, and protecting materials of construction to give longer life and equivalent or better service at a lower cost than they otherwise would be. The third obvious way in which we are always attempting to better the effort is to enable fewer people to produce more, at a lower cost, by substituting machines for manpower, and

improving methods and techniques. There may in some instances be means of reducing costs by remedying defects in organisation, which I do not discuss. Generally, advancement along the ways open necessitates expenditure of capital to effect savings in excess of that capital value. Such problems are resolved by knowledge and often specialised knowledge of ways and means with fine assessment and judgment of the effort, and bold application.

Emphasis of progress in all branches of engineering is placed on the fresh scope given to industry, in the development of new materials in the metallurgical field and in the use of plastics, powdered metals, plywood, and similar compositions. There is an increasing range of fresh materials of construction, available for use. There is an evident potential competitive power of aluminium light alloys as an economic alternative to steel in large structures. Progress in the intrusion of aluminium into structural engineering is evident. Methods of construction take advantage of the lightness of this material to dispense with scaffolding and ladders during construction.

In the design of buildings, both the Ministry of Works and the Building Research Station continue to issue publications on the progress of research and on the development of constructional techniques. Certain materials and methods are being eliminated and replaced by fresh developments in construction. There is a general move to adequate natural lighting and ventilation, efficient thermal insulation for fuel economy, truly permanent structures requiring little maintenance, speed of erection, and low total cost.

Advancement in Concrete Design

There is considerable advancement in techniques of using precast concrete units, and a significant development in prestressed concrete for constructional work, in several instances with light alloy roof members. Post tensioning as the appropriate means of applying the stress in heavy work is becoming generally acceptable, and a great extension of the process in civil engineering work of all kinds is foreshadowed. Among the influences now affecting structural engineering is the trend towards the application of steels with higher yield strengths by the introduction of suitable low alloy structural steels and advances in methods of design.

There is considerable development in the generation and use of power, with inauguration of plants for peak-load operation in combined power systems, and outstanding developments in orthodox prime movers, such as the significant steps taken in exploitation of gas turbines. There is steady encroachment of diesel-engined vehicles in the field of small steam locomotives for shunting and similar operations, with further development of mechanical transmission with the adaptation of fluid coupling drives. In mechanisation there are manifest new machines to economise in or replace manual labour in every field of action, together with developments in mechanical handling equipment for conveying elevating and transporting materials of all kinds for many purposes.

Instrumentation has become a great aid to efficiency and economy, with an increasing application of electronic methods in direct instrumentation. In the branch of electrical physics and engineering known as electronics, all kinds of operations can be carried out at very high speeds, processes can be timed to a small fraction of a second, and heavy industrial plant can be controlled without any serious reaction on the controlling agent. The combination of photo-electric cell and gas-filled relays provides a means of control, and can also be used as a protective manner for safety. One outstanding development in the science of electronics is that of memory units and computation by means of which information of processing or costing not otherwise obtainable can be extracted. Others are the application of ultra-sonic techniques to practical problems, such as the detection of internal flaws in engineering materials and structures, measuring thickness of metal, and the use of ultra-sonic vibrations for precipitating or coagulating particles in gases.

A considerable amount of research is being carried out by official and semi-official bodies in the prevention of corrosion and the stability of protective finishes under weathering. Active attention is being given to cathodic protection of buried structures which could have far-reaching effects on the practice and cost of mainlaying.

Methods of weighing and measuring materials in their progress through the works need careful study, for it is only by maintaining the highest rate of output as a uniform thing that the best results can be obtained. The loss of heat from exposed hot surfaces by radiation and air contact, the transmission of heat through metal from gas to gas, gas to liquid, saturated vapour to liquid, liquid to liquid, varies so enormously under differing conditions as to demand more experimental research.

The Problem of Corrosion

Applied chemistry is constantly contributing something new to industry in the direction of reducing costs, eliminating waste, utilising by-products, improving processes, and developing entirely new products. A great deal of physical research is being directed toward the solution of problems in hydraulics, the strength of materials, physical metallurgy, and mechanical and electrical engineering which will result in the improvement of materials and processes, perhaps without any spectacular effect, but nevertheless important. One of the most expensive wastes in metal construction is caused by corrosion, so that it is natural to find research devoted to overcoming the disintegration of metal from this cause. Activity prevails in a multitude of other branches of engineering and science. The roots of industrial development are the research laboratories, and these roots have penetrated so deeply and widely into the rich soil of applied science that they must continue to grow.

Growth of industry has stimulated the growth of technical libraries and publication and information services. Standardisation is a field for economy and profit, and there is a continuing output of British Standard Specifications and Codes of Practice to be adopted. A mass of information relating to research, development, and experience is available for selection, abstraction, and profit.

Watch Every Onward Step

In the earliest days, there was no written record of past work to form a basis for future advances, and few could follow the trails they stumbled across, or have even a glimmering notion that a host would later tread the path they so painfully discovered. The progress of science and engineering is now too rapid for any man to keep pace with the advance in all its departments, but we should try to hold ourselves in touch with the main results arrived at in other branches than our own, while in that branch itself it should be our constant aim to watch every onward step that is taken by others, and not fall behind the van. This task is not a light one. Even if it was confined to progress of engineering and science in this country it would be arduous enough, but progress belongs to no country. It continues in other countries; and if we would not willingly be left behind we must keep ourselves informed regarding this progress. New information being the result of investigation should be brought to the attention of all who may value it, as soon as proved sound. It is equally important that those who can gainfully use the knowledge, do so. There is a pressing need for a reduction in the time now required to conclude matters of research and an even more pressing need to reduce the period between research and practical application. Research and development in all branches of science and engineering wrestle with the problem of communicating findings to industry. Industry wrestles with the problem of extracting that which is useful from the mass of information.

If we were content to look back over past achievements we might well indulge in jubilant feelings, but our eye is turned rather to the future than the past. In front of us rises a mist hiding the still unknown. What has been accomplished is but little in comparison with the infinite possibilities that lie beyond, and so we press on, not self-satisfied and exultant, but rather humbled and reverential, yet full of hope and courage.

Vote of Thanks

Mr. W. S. Hubbard, in proposing a vote of thanks to Mr. Johnston, said the most important factor in maintaining progress, apart from the necessary fundamental knowledge, was the right attitude of mind. Knowledge of developments was of no use without the desire to employ them. All would agree with the viewpoint that the industry should take risks for the sake of advancing technique. Mr. Johnston had referred to university training versus the hard way. Younger men of today possibly did not really understand what was meant by the hard way. The older of them did, and he found much difficulty in recognising the current hard way, and wondered whether, in fact, it really existed. There had been a fundamental change in the education system during the past 30 years, and it had been shown recently that whereas 50 years ago only a small proportion of the top 15% of young men in the relevant age group went on to the university, today the majority of such young men did, in fact, pass from school to university, or after a year or two of pre-university training. It was probably true nowadays if a younger man of a given level of ability was required, one was more likely to find him in the ranks of the university-trained than anywhere else. This was not the result of training, but of the wider methods of selection and the greater educational opportunities available.

A Disturbing Factor

There was a most disturbing factor in the satisfactory training of the younger qualified man. That was the fantastic time taken to complete a piece of engineering. It was time they paid for, and, however good his training and experience, he would only become a valuable asset to himself and to the community if he thoroughly understood what time meant. If the difficulties of keeping abreast of the times, and digesting the enormous amount of information which became available almost daily, continued, one could easily see the establishment of a new profession known as the 'information officer,' possibly a subsidiary appointment to a development engineer. The point was, of course, that there was urgency and a need deliberately to cut out the non-essentials; to do this, it was necessary to keep in mind that it was the answer that was wanted.

It was intended in the North Western Gas Board's new course of training for production and distributing engineers that this factor should receive serious consideration throughout the course. There was little doubt they owed a tremendous amount to the contracting side of the industry for the current state of development, because in the past they were forced to create markets and employment, and took risks.

Mr. Hubbard said he fervently believed in the use of specialists and consultants. If the need for specialist advice was either infrequent or of short-term character, it was preferable and more economical to employ independent people, thus avoiding the always difficult problem of dealing with redundant sections. There was immediate need for a reduction in the time to conclude research, and even greater need to reduce the time between practical research and development. Many thought nationalisation would present the opportunity for solving the problem, and they might well ask if they were satisfied with the progress to date.

Co-operation in Research

Mr. J. M. McLusky, who seconded, said the cost of technical and scientific service could be very high, and this service had to show its return in the economy of the industry. True, research as at present organised by the Gas Council should prevent overlapping of effort, and research and development undertaken by individual boards gave great promise for the future. The contracting industry had always been willing to co-operate and had in fact been the specialists to many individual undertakings.

Mr. McLusky went on: 'That we shall have to carbonise more and more tonnage of inferior coals seems inevitable, and thus the need for processes to gasify these coals is stressed. It will be an absolute necessity, and not a question of economics, as I can well imagine the price of interior coal following an upward curve upon the demand for such coals, if satisfactory methods of carbonising are found. We used to buy singles at a lesser price than doubles; then singles were in short supply so up went the price, and doubles were cheaper. I am certain that in recent years the consumer service aspect of our work has probably had greater attention focused upon it than any other, and with the desired results, for with a populace almost too ready to criticise monopolies and nationalised bodies, their general lack of complaint provides its own answer. The capital cost has been high, and we shall feel its burden over the years, but I am certain this money has been well spent.'

Utilisation Efficiency

Utilisation efficiency was one of our greatest fields of service. In the larger gas-consuming plants much could yet be done to improve efficiency of use. Naturally, in their successful efforts they reduced their output, but he hoped that would be a short term result. The consumer gained by a cheaper gas cost per unit of work done, which was reflected in his business, which should, as a natural result, lead to business expansion or, in the worst case, remain static. Even here, it would be a gain if the alternative was the loss of the load unable to stand up to external competition. This competition was now so severe that every step should, and must, be taken to combat it.

Mr. McLusky paid tribute to the part Mr. Johnston had played in the promulgation of knowledge within the Institution of Gas Engineers. His was the lead in the deliberations from which was evolved the Board's own Code of Practice in connection with main and service laying, and this Code of Practice had become the medium by which the main and service layers had been and were being trained. In this period of rapid change, when man's achievements moved so fast, when their discoveries and development seemed to gather greater and greater momentum, the address was timely and focused attention on the many and varied facets of knowledge already available, which had to be studied, approved and put into practice to the benefit of the industry.

Education and Training

By J. HALL,

Chairman, Scottish District Education Committee.

In the course of a paper given at the spring meeting of the Scottish Association of Gas Managers on April 9, Mr. J. Hall said :—

It is encouraging that our Central Institution in Scotland was first in the field with approved courses for Higher National Certificates in Civil Engineering to meet the requirements of the Institution of Gas Engineers Associate Membership Examination. Such approved courses are now available at the Royal Technical College and the Heriot Watt College; and as the result of recent negotiations it is hoped to have an approved course running at Dundee Technical College in the 1954-1955 winter session. They also hope to include Aberdeen very shortly.

The various courses which have been approved have all been designed to allow successful candidates to claim complete exemption from the Associate Membership Examination of the Institution of Gas Engineers, except for the second paper in either Gas Engineering (Manufacture) or Gas Engineering (Supply). This paper is set by the Board of Examiners of the Institution of Gas Engineers, and the type of question is purposely put to test the candidates' practical experience. All candidates must pass in this paper irrespective of the claims for exemption from other parts of the examination. It is only fair to point out that, owing to the composite nature of the course, the part-time student is faced with quite a formidable task. Criticisms have been levelled against the length of the course, which, if starting from scratch, without any preliminary exemptions, requires seven years of part-time study to complete. With strict insistence on the entrance qualifications laid down by the Scottish Gas Board for recruits to our industry, and allowance made for part-time day release, the curriculum can be modified so that the Higher National Certificate course may be completed in five years, and the strain materially reduced. It is undoubtedly hard going, but no worthwhile qualification is achieved without effort, and in this case the reward fully justifies the effort expended.

Educational Activities

Considerable attention is being given to the training of personnel in management and industrial administration. Recognition is given to the need for more than the strictly technical aspects of an engineer's training, and an increasing number of professional bodies require management subjects to be studied by their candidates. As far back as 1947 the Urwick Committee made recommendations on part-time study of management in technical and commercial colleges. Our District Education Committee sub-

mitted a report to the Executive Committee on the excellent training facilities available in Scotland, but the inclusion of management study in our educational curriculum is still under discussion.

Reference should be made, however, to the I.G.E. Residential Course in Management Studies at Brooklands County Technical College, Weybridge. The Council of the Institution actively supported this scheme, the object of which is to provide a short residential course of seven weeks' duration run on the 'syndicate system.' The course is highly concentrated, studies in management being combined with authoritative lectures on technical subjects, accountancy, industrial relations, and like matters related to actual conditions in the gas industry.

Training courses for teachers of gas subjects are organised each year by the Ministry of Education, and deal with teaching methods, visual aids, and discussions on problems arising from teaching experience. Special lectures and visits to works, etc., are included. Acknowledgment is made to the Scottish Gas Board for their generosity in meeting expenses of Scottish teachers attending these courses.

Teachers whose names are on the Institution's Register of Teachers in Gas Subjects are kept supplied with the latest brochures and information circulars supplied by the Gas Council and by member firms of the Society of British Gas Industries and any other information which may be considered of value in assisting the teachers. The number of teachers on the Register at present is 424.

Civil engineering correspondence courses, approved by the Institution, dealing with the main subjects for examinations in Gas Engineering (Manufacture) and (Supply) and Applied Chemistry for the Associate Membership Examinations are envisaged at the Civil Engineering Correspondence College, Birmingham.

General education up to the standard of the Higher Leaving Certificate of the Scottish Education Department or equivalent is now practically essential for young people entering our industry, more particularly for those contemplating training to professional level. While there is not much doubt about pre-entry qualifications in general education, there are other qualities, such as the capacity for logical thought, self-reliance, resourcefulness, and an intense interest and enthusiasm in the job, if the young entrant is to achieve success in his chosen profession. The development of these essential qualities will, however, largely depend on the scope and thoroughness of the training schemes which can be made available, and the keenness and determination of the young man to take full advantage of these opportunities.

Poor Examination Results

Disappointing examination results continue to give rise to serious concern, and reference to the annual reports of our Scottish District Education Committee reveal the disappointing lack of success of Scottish candidates. From an analysis of the position it is becoming increasingly evident that we must develop to a much greater extent than is at present generally available systematic courses of practical training within our industry. Training for the practical side of our profession should receive as much detailed consideration as that given to technical education, not the least of the benefits derived being the knowledge and understanding gained by actual contacts with skilled, semi-skilled, and unskilled workpeople alike.

The Ridley Committee has concluded that competition between the nationalised fuel industries will be in the country's interest. High standards of performance are therefore essential. Progress in our industry demands high standards of performance in all its branches, and this in turn requires adequately trained personnel at all levels.

It is encouraging to note the wide scope of training facilities envisaged by area gas boards. Typical schemes of education and training may be roughly divided into three parts.

(1) Facilities offered to employees in regard to further education including: Daytime release, leave of absence for scholarships, permission to study by means of correspondence courses, payment of fees and travelling expenses, refresher courses and conferences, release of trained personnel who train others, and attendance at Ministry of Education Short Courses.

(2) Facilities offered to employees in regard to vocational training and supervisory training centres provided by the Boards.

(3) Training under agreement which is normally split up into three main groups arranged to give the fullest opportunity to young persons to attain full craft or professional status. Suitable schemes can be grouped under the headings: Craft apprenticeships, staff pupilage, and post-graduate training.

We must take the most enlightened view of our training schemes. They are certainly designed primarily to encourage intelligent young men to enter and continue in our industry; but even if they do not stay with us, we shall feel we have made a useful contribution to the essential rational pool of technically trained personnel. When the schemes envisaged by our area gas boards are fully developed, we shall have an education and training scheme comparable with the best.

Mr. D. Beavis (Edinburgh) expressed on behalf of members of the Association, their appreciation of the work which Mr. Hall had done in the cause of education. He felt that many of them might not fully appreciate the significance of the new Education Scheme of the Institution of Gas Engineers; and Mr. Hall's paper would prove a helpful reference. He had heard a good deal of criticism about the long and hard way which had to be travelled to secure Associate Membership of the Institution; but if Associate Membership was to have the status appropriate to the gas profession, it was necessary to tread the hard path. They needed a new outlook on the Educational Scheme as it existed today; and facts had to be faced.

Mr. J. M. Dow (Lanarkshire) thanked Mr. Hall for all the work he had done for education in the gas industry. Mr. Hall had been a 'back-room boy,' but many of those present that day in fact owed him a deep debt of gratitude.

CHEMICAL WORKS SAFETY CONFERENCE

The Association of British Chemical Manufacturers state that the fifth Chemical Works Safety Conference, which will take place from the afternoon of November 5 until the morning of November 7, will be on 'novel lines.' Instead of the usual presentation and discussion of papers, there will be works visits to Wilton and Billingham where, by the courtesy of Imperial Chemical Industries, Ltd., safety methods and devices will be seen in practical operation. The conference, suggests the Association, will be of particular interest to works managers, plant superintendents and others responsible for production, as well as safety officers. The detailed programme of the conference and of the proposed arrangements will be issued in July. Early advice should be given by those wishing to attend the conference as accommodation may be limited and applications will be treated in strict rotation. The address of the Association is Cecil Chambers, 86, Strand, London, W.C.2.

SOCIETY OF ENGINEERS' CENTENARY

To mark the completion of 100 years service to civilisation the Society of Engineers (Incorporated) held four days of centenary celebrations in London from May 4 to May 7, culminating in a Centenary Banquet in the historic hall of the Fourteenth Century Fishmongers' Company beside London Bridge and close to an early meeting place of the Society. Headed by an impressive list of Fellows and Hon. Fellows, including Sir Winston Churchill, Professor Huxley, Lord Nuffield, and Sir Frank Whittle, it is the only national professional society in Britain covering all branches of engineering. With members in every civilised country, a separate Division in Australia, and many members in such developing areas as India and Pakistan, Africa and Canada, the Society is represented in a great part of the world's progress in civil, mechanical, electrical, and aeronautical engineering.

One hundred years' development in each of these main branches of engineering was represented in four papers which were presented at the main business sessions of the celebrations on May 5, at the Geological Society's apartments at Burlington House, Piccadilly, where the Society holds its ordinary meetings.

The Duke of Gloucester has signified his consent to become Patron of the Society.

Horizontal Carbonising Plant

Our illustration shows eighteen beds of ten 24" x 18" through Horizontal Retorts, including the extensions of five beds shown in the foreground, recently completed, with Congdon Standpipe System and Coal Handling Plant, etc. The existing thirteen beds have also been converted to the Congdon System.

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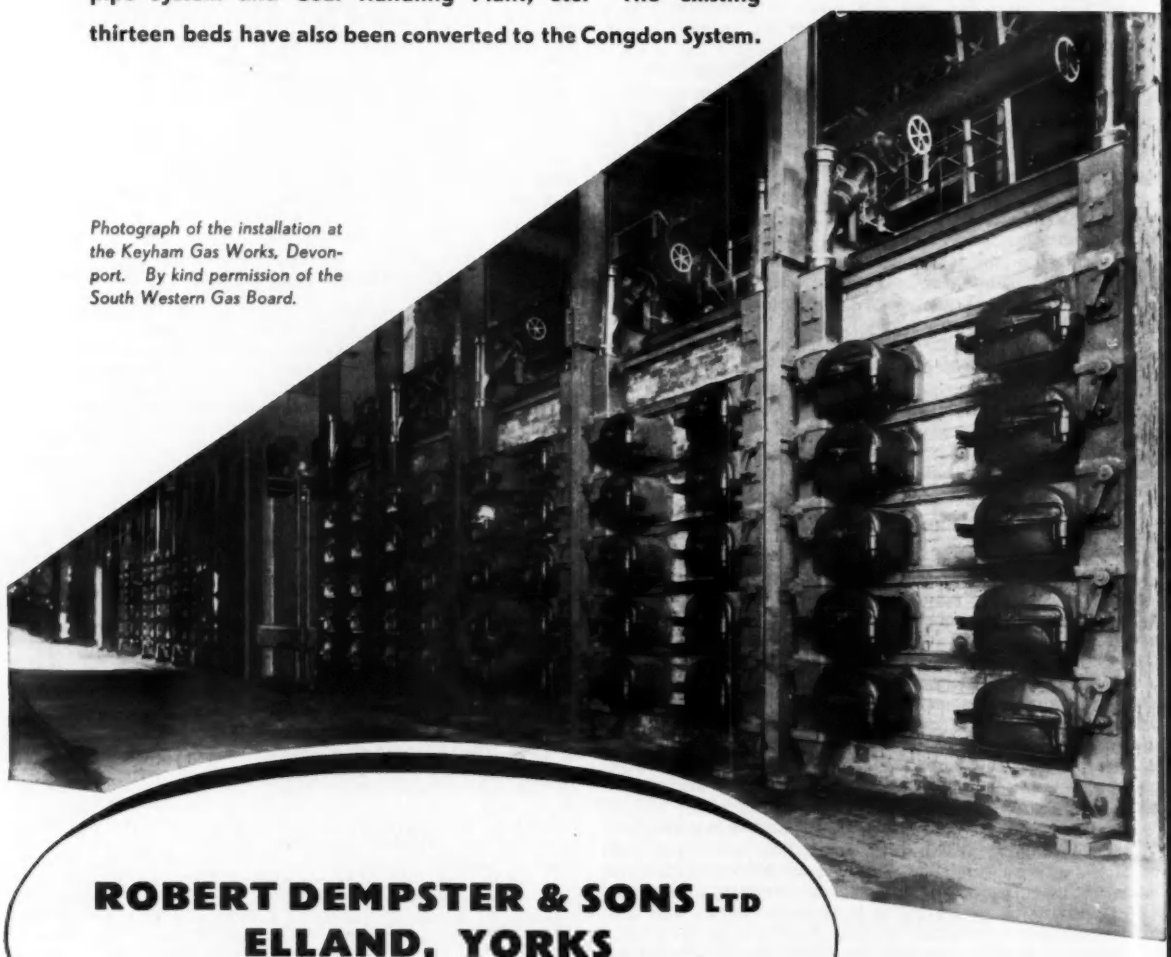
99 years of service to the Gas Industry



Photograph of the installation at the Keyham Gas Works, Devonport. By kind permission of the South Western Gas Board.

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GRID INTERLINKAGE

FROM A PAPER TO THE MANCHESTER DISTRICT JUNIOR ASSOCIATION OF GAS ENGINEERS ON APRIL 28, BY

K. SUMMERSGILL,
B.Sc., Assoc. M.Inst.Gas E.

Nationalisation made many schemes possible which, although necessary on economic grounds, had not been implemented because of local prejudice and control. Throughout the country interlinkage mains have now been laid, some are in the process of being laid, others have been or are being planned.

Freedom to integrate has brought the idea of grids into everyone's mind, with a resultant flood of theories and views as to what constitutes a grid, how it should be constructed, and how it should be controlled. There are many points of view. The idealist insists on an average hourly input and an average hourly take-out at each point, and regards the very mention of a peak load of any sort as heresy. Another man, who man be described as 'governor happy,' rarely attempts to deal with problems on the district, that arise from poor pressures, additional load, etc., by any other means than by fixing yet another district governor on the grid main. Both his view and that of the idealist if applied indiscriminately can lead to uneconomic grid connections and increased overall distributing costs.

Another school of thought seems to believe that the closure of all but the largest production stations by 'gridding' is the answer to many production shortcomings. Unfortunately, up to the present no large reserves of natural gas have been found. As a rule, coal gas still has to be manufactured, and as long as existing methods of carbonisation are used the resultant coke has to be distributed and sold. The cost of coke transport should not be overlooked when deciding whether or not to supply a station in bulk.

The Case for Grid Mains

In theory, the case for laying interlinkage mains will usually appear straightforward. In practice, however, the reasons may not be so simple and obvious, but the result of numerous small factors. The basic case for laying any interlinkage main will usually be covered by one of the following headings:—

(a) To give a complete bulk supply to a less efficient unit.

(b) To enable a unit to be base loaded.

(c) To allow extensions to existing plants to be built in economic units, and to allow them to work at a high load factor on completion.

Other advantages can result from an interlinkage, which although they may not be considered sufficient in themselves for the laying of a main, could have some influence on a decision. These may include:—

(d) Co-ordination of plant repairs at production stations.

(e) Better utilisation of storage capacity.

(f) The maintenance of supplies in the event of plant breakdowns.

(g) Reduction in district compression costs at the units interlinked.

(a) *Complete Bulk Supply.*—Since vesting date, many small and medium sized works have ceased production. In the North Western Gas Board's area the number of production units closed down between vesting date and January 1, 1954, was 26.

Usually the case for closing down a production unit is that gas can be supplied to its area more cheaply via interlinkage than by manufacture at the unit itself. Some actual examples of the savings to be effected are shown in Table 1. The figures include for the additional cost of transporting coke to the district of the works to be bulk supplied and have been arrived at by considering the transport cost only; loading and discharging are not an additional cost. It is very difficult to arrive at a firm figure, but from the costs available it would appear reasonable to use an additional cost of 8d. per ton per mile.

In many cases it is found that there is a credit on coke distribution costs, since handling is much more efficient at the larger works.

(b) *Base Loading.*—Great economies in gas manufacture can be effected by allowing seasonal variations in gas demands to affect only a limited number of works, thus enabling the remainder to be operated under base load conditions. An example of this is the Brierfield works of the Burnley Group, where base loading has reduced the cost of gas manufacture by 0.4d. per therm.

Of the production units in operation on January 1, 1954, in the North Western Gas Board's area, 21 were working wholly or partially under base load conditions.

(c) *Works Extensions.*—The savings to be derived from expanding production capacity by economically sized units may be readily appreciated. It is cheaper to add a 4 mill. unit to one works than a 2 mill. unit at each of two separate works. With integration you get a much higher initial load factor on the new production unit. In other words, better use is made of capital.

(d) *Co-ordination of Plant Repairs.*—The gas demand can be arranged to fall on a selected number of interlinked units. In this way larger sections of plant than would normally be considered possible can be taken out of operation for repair, the extreme case being the total

TABLE 1.—ECONOMICS OF GIVING A BULK SUPPLY TO VARIOUS WORKS

Unit closed down	Date closed down	Annual send-out therms	Supplying unit	Cost of gas into holder pence per therm		Annual cost of gas made locally	Annual cost of gas delivered in bulk				Additional coke distribution costs	Total cost of gas supplied in bulk	Annual saving	Saving	
				Made Locally	Supplied in Bulk *		Cost at supplying unit	Annual charges on distributing plant	Holder station attendance	Total				Pence per therm	Percentage
						£	£	£	£	£	£	£	£		
Hindley	Oct., 1952	1,063,170	Wigan	11.42	8.69	50,600	38,500	800	1,000	40,300	410	40,710	9,890	2.23	20%
Lymm	Aug., 1952	241,556	Partington	10.42	6.56	10,487	6,602	1,423	700	8,725	105	8,830	1,657	1.65	16%
Carnforth ..	Apl., 1954	165,771	Lancaster/ Morecambe	18.20	8.79	12,568	6,071	753	700	7,524	180	7,704	4,864	7.04	39%
New Mills ..	Mar., 1952	435,196	Stockport	16.43	6.78	75,948	43,980	3,236	4,500	52,716	985	53,701	22,247	3.43	29%
Hayfield	Mar., 1952	117,345		8.59											
Chapel Whaley ..	Sept., 1952	1,004,307		10.03											
Northwich	June, 1953	1,778,563	Partington	10 94	7.75	146,700	96,600	22,350	2,000	120,950	6,700	127,650	19,050	1.50	13%
Middlewich ..	Jan., 1953	224,191		11.14											
Sandbach ..	Feb., 1953	518,371		14.50											
Winsford ..	Mar., 1953	529,009		10.88											

* Includes compression costs.

closing down of a works, to enable repair and reconstruction work to be done throughout from the retort house to the inlet of the holders. Production engineers appreciate that, if a bench of retorts can be repaired rather than a bed or beds on a bench, a much better and more lasting job results. In the same way it is possible to extend summer repairs over a longer period.

(e) *Use of Storage Capacity.*—Fuller use can be made of new and existing storage and extensions to storage capacity suitably dispersed in economic sizes. By adjusting the normal average hourly input, it is also possible when stations are interlinked to repair holders, which would otherwise have been impossible without the building of new holders, especially when the bulk of a station's storage is concentrated in one holder. The recent repair of a 10 mill. cu.ft. holder at Bradford Road works, Manchester, is a good example of this. The holder in question represented one-third of the previously available storage.

It is sometimes thought that closing down a works is reason for increasing its storage, since supplies are dependent on a single supply main. Where supplies are only obtainable from one direction, any repair work necessary on the transmission main can generally be completed within a few hours, provided an efficient organisation is available for grid maintenance and repair work. If the quantity of gas in stock is low when the fracture occurs, the latter is rarely so bad that permanent repairs cannot be delayed until the input to the station has been increased to fill up the storage.

Interlinkage whereby, in case of urgent need, one unit can use the storage of another usually indirectly by varying its own intake from or output to the grid should result in a reduction in the total storage needed.

(f) *Maintenance of Supplies.*—When units are interlinked, in the event of a major breakdown of production plant it is possible to spread the effect over a wider area. In this way it is either absorbed or becomes so small as to be hardly noticed, the alternative being a disruption of supplies to a serious extent over a smaller area.

(g) *Compression Costs.*—Capital outlay on compression plant for local supplies can often be reduced by using the grid compressors as standby plant, or by using the residual pressure in the grid at intermediate receiving stations, or by using the grid under certain conditions to reinforce the district.

Design of Plant

Once laid, gas mains will, under normal conditions, last more than 50 years. No engineer can accurately forecast so far ahead, and estimates should be for a shorter period, a 20-year period is usually taken with a closer review of an immediate 10-year period.

The consideration of domestic sales can be split into:

(*a*) *Existing Consumers.*—These can be further divided into ordinary and prepayment consumers for assessment of demand. A further sub-division sometimes can be made on a rateable value basis. Future consumer saturation and average consumption per consumer must be estimated for each group of consumers considered, in order to estimate future sales.

(*b*) *New Consumers.*—An estimate of the number of new houses to be built must be made. This forward planning information is usually available from local surveyors, and, if plans have not been prepared far enough ahead, a reasonable forecast can usually be made based on known proposals and local knowledge as to the possibility of housing and industrial development. Once the number of houses to be built has been estimated, an approximation should be made as to likely consumer saturation and as to the possible sales per consumer from which annual demands can be calculated.

An estimate of commercial loads must also be made. Larger consumers should be interviewed individually to obtain an idea of their future requirements. With smaller consumers an all-embracing estimate may be made. The development of new small commercial loads will usually be related to the domestic building programme, and, when this has been fixed, a good estimate of this potential load can be made.

Industrial loads are by far the most difficult to assess. A careful survey must be made of all existing consumers, and their views sought as to future requirements. Other potential gas consumers should also be approached to ascertain the possibility of their using gas in the future. Areas planned for industrial development should be studied and information obtained from the local planning authority as to the type of industry which will be encouraged to develop in the area.

Care must be used in assembling the overall estimate of future loads, since, if an under-estimate is made, the distributing costs for the higher loads will be greater than they should be. On the other hand, if the loads are overestimated the distributing costs will again be higher, especially in the early stages of development. A grid system has a certain amount of flexibility in that the initial pressure can always be increased; but it must be stressed that, for a given volume over a fixed distance, there is an economic size of main and an economic pressure, and that any variation in volume, and consequently pressure, will cause the distribution costs per therm to rise.

Costs have been estimated for supplying 420 mill. cu. ft. per annum over a distance of 10 miles through various diameters of main. The maximum hourly volume of gas to be compressed has been taken as 1/24 of the maximum day's demand, and the latter has been taken as 1/250 of the annual volume.

It has been assessed that, for 420 mill. cu. ft. per annum

Our photograph was taken during the visit of the Manchester and District Junior Association of Gas Engineers to the work

over 10 miles, the economic diameter is 10 in. and the pressure 7.6 lb. per sq. in., the distributing cost being 5.2 d. per 1,000 cu. ft. In this instance the cost of a 12 in. diameter main is only 0.06d. per 1,000 cu. ft. more; and if in arriving at the load estimates as above it was felt that a conservative view had been taken or if there was the possibility, but no guarantee, of an additional large industrial load, the case for the larger main could possibly be proved.

As the volume of gas is increased, the distributing cost per 1,000 cu. ft. is reduced, thus giving the impression that if the volume is under-estimated initially, it is not important since extra load will reduce the distributing costs. The fact is that, if extra load is considered and the economic size taken, distributing costs would be further reduced as shown in Table 2. This gives the distributing costs for various volumes of gas through 10 miles of main.

TABLE 2

Annual volume mill. cu. ft.	Annual costs through 10 in. main £	Cost per 1,000 cu. ft. through 10 in. main d.	Economic dia. ins.	Annual costs through economic dia. £	Cost per 1,000 cu. ft. through economic dia. d.	Annual saving using economic dia. £	Saving as % of economic dia. cost
210	6,971	7.97	8	6,430	7.35	541	8.4
315	7,964	6.07	10	7,964	6.07	—	—
420	9,238	5.27	10	9,238	5.27	—	—
630	12,429	4.74	12	11,614	4.43	815	7.0
840	16,461	4.70	15	14,269	4.07	2,192	15.3
1,050	21,069	4.82	15	16,746	3.83	4,323	25.8

In the actual example considered, even if the estimated potential loads are not reached, the economic diameter for 75% of the load still remains at 10 in. This helps to determine what diameter should be laid where there is a doubt of achieving the estimates.

When deciding the diameter of main to lay, the engineer may be helped to reach his decision by considering not only the designated volume but also the effect of varying that volume. In this way, in many cases where there is any doubt regarding the future loads, a diameter of main can be chosen which will be economic over a fairly wide range of volumes. When making all these decisions, the engineer should also consider the date of any potential increase in demand. If a grid main is designed for some future load, if this is well above existing loads, the diameter will be larger than initially required for economic working, and the existing and initial loads will have to carry the high capital charges. Where the engineer is faced with a choice between two diameters this consideration will point to the smaller diameter, with lower annual charges on capital but with higher compression costs when long term loads have been reached.

The costs of supplying varying volumes of gas through main diameters of from 6 in. to 20 in. over a constant distance of 10 miles have been considered. The economic diameter increases with volume and the distributing cost per 1,000 cu. ft. decreases with increased volumes. When the initial pressures of the economic scheme for each given volume are considered, as can be seen in Table 3, they do not appear on first sight to follow any pattern.

TABLE 3

Annual volume mill. cu. ft.	Main dia. of economic scheme in.	Initial pressure of economic scheme lb. per sq. in.
210	8	6.2
315	10	4.9
420	10	7.6
630	12	6.9
840	15	4.3
1,050	15	6.8
	Average	6.0

On further examination it becomes clear that the range of pressures 4.3—6.9 lb. per sq. in. is not so great when the large variation in volumes is considered, and that the variation from the average pressure 5.7 lb. per sq. in. is even less noticeable. Where the pressures are higher than average, then the economics are least affected when the next larger diameter of main is considered. Conversely the next smaller diameter of main has less effect on the economics when the pressure of the economic scheme is less than the average pressures.

For a given distance, there is an economic pressure to distribute gas, independent of the volume of gas, and for 10 miles the economic pressure is about 6 lb per sq. in. The pressure will obviously vary according to power costs. It is dangerous to be too dogmatic, as other considerations have also to be taken into account. For instance there is sometimes a limit to the upper diameter, as mains over 24 in. diameter cannot always be laid through built-up areas. If an attempt is made to do so costs can rise out of all proportion to the increased carrying capacity. The economic diameter is directly proportional to the volume.

Over a wide range of distances the economic diameter is independent of the distance. In the case considered, a 10 in. diameter main is economic over a range of from two to 15 miles, but a still more interesting point is that, when for longer distances an 8 in. diameter main becomes cheaper, the difference in costs between 8 in. and 10 in. diameters is only small. Longer distances have not been considered, as the initial pressures would be over 40 lb. per sq. in. which is considered in this country to be the highest pressure at which mechanically jointed cast iron mains should be worked.

Pressures higher than 40 lb. per sq. in. would involve the use of steel mains and the consideration of modern welding and weld-testing techniques, also internal and external protection of the steel tube. Unless natural gas is found or gas is manufactured with a high residual

Ironworks Co., Ltd., on April 28. The photograph includes visitors, Stanton directors, senior officials of the firm, and guides.

pressure, such as in the Lurgi process, present distributing costs would indicate that high pressures are uneconomic over the distances involved in this country. Longer distances for coal gas distribution would affect considerably the coke distribution costs.

The conclusions to be drawn from the foregoing would appear to be as follows:

1. Over a constant distance the economic diameter of main to lay is directly dependent on the volume of gas to be passed, and the economic pressure will be constant within limits dictated by the use of standard diameters of pipe.

2. With a fixed volume the initial economic pressure rises with the distance over which the gas is to be transmitted, but the economic diameter is constant over a wide range of distances, although it tends to reduce slightly with increased volumes.

The above conclusions show that, in deciding an economic main size, the variable of distance, which is usually known, is unfortunately relatively unimportant compared with the variable volume which usually has to be estimated.

Compressors

Once the diameter of main to be laid, based on estimated loads, has been determined, these loads, together with the calculated operating pressures, should be used in deciding on the type of compression plant to be installed.

Where the outlet pressure is above 12 lb. per sq. in., it has, because of the volumes to be handled, generally been the practice to install reciprocating compressors. With the building of larger production units, involving correspondingly larger volumes of gas to be compressed, the future tendency on these large stations will be to install multi-stage centrifugal compressors. Below 12 lb. per sq. in., rotary compressors will continue to be used for small volumes, and centrifugal for larger volumes of gas.

Careful consideration should be given to the source of power on larger works. This may be electricity generated from steam raised from waste heat or such steam used directly. Where no surplus waste heat steam is available, bought electricity is now the usual source of power, if available and if the price per kilowatt is not exceptionally high. When positive displacement machines are to be electrically powered with normal daily and seasonal fluctuating loads, it is often economic to install variable speed motors. Diesel engines can be installed where electricity is not available or as a standby where there may be a supply failure. In the latter case, a diesel alternator may be another solution to prevent all the wear on one compressor, especially if the alternator can also be used to supply standby power to other plant. Diesel engines have a high capital and installation cost and also involve high maintenance charges. The number of days per year they need to be down for overhaul is also high compared with other driving units.

The number and size of compressor units to be installed also need careful consideration. Plans invariably cater for some load development; but if a machine is installed and powered to handle long-term loads, the initial and interim running costs may be uneconomic and the machine ready for replacement by the time the long-term loads are reached. On the other hand, the capital costs would be too high if compressors were installed only as and when required to meet the loads. This problem is more acute with positive displacement compressors than with centrifugal compressors, since the latter can usually be designed to have additional stages added to meet increased pressures, and can be speeded-up to meet increased volumes. Where large volumes of gas are to be compressed, a number of machines of different capacities can be installed, when two or more can be run in parallel. The only standby plant usually needed will be one compressor, equal in capacity to the largest compressor running. When the volumes of gas are lower and the estimated increase is large, it is sometimes economic in the initial stages to have the compressors sleeved and driven by small motors which can be replaced as the loads develop. Nationalisation has made it easier to interchange compressors and driving units between stations, but there is still scope for further standardisation of these components.

The sizing of other plant and equipment is straightforward, based on the estimated loads and pressures.

Peak Loads

The type of peak load will come under one of the following headings:

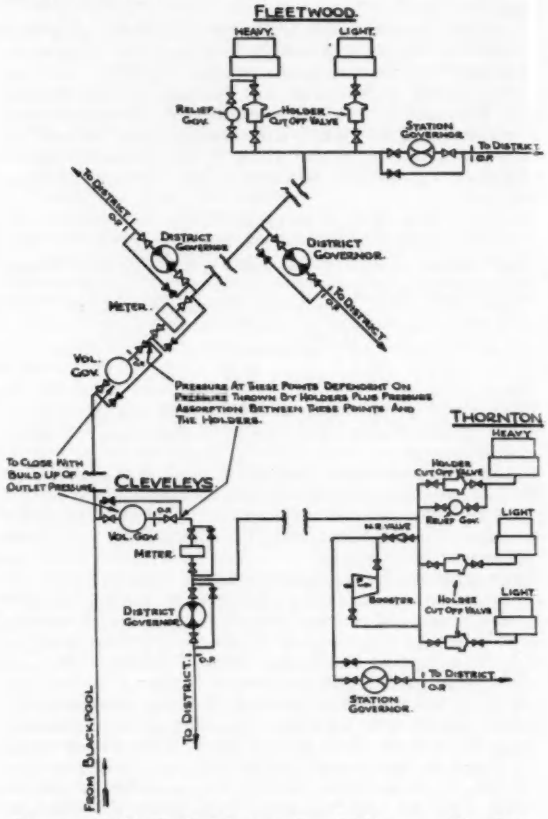


Fig. 1.—Fylde Grid: Fleetwood and Thornton Cleveleys

(*a*) Reinforcement of a district in the area of the supplying or receiving undertaking.

(*b*) Supply to new consumers in rural communities, on the route of the main, or within economic distance of it.

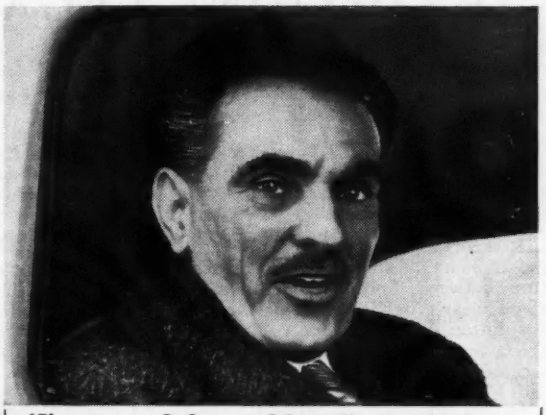
(*a*) *Reinforcement of an Existing Area of Supply.*—When a grid main passes through an area where reinforcement of the existing supply is necessary or where development is planned, the easy answer is to put a district governor on the grid main. This should never be done without due consideration of the effect it will have on the running costs of the grid.

However, there are ways of supplying peak loads without affecting the average hourly load on the grid, and one method is illustrated in Fig. 1, where a section of the Fylde grid is shown. At vesting date, a new main was being laid from the gasworks at Thornton to reinforce the Cleveleys area. As this was on the same route as the bulk supply main would have to take, it was decided to make use of it in two ways—to reinforce the district at peak periods, and to pass gas to storage at off-peak periods. This was done by housing the volumetric governor at Cleveleys, the outlet being connected to the end of the new feeder, and by installing a district governor from this latter main in the same house. The volumetric governor is set at the required average hourly rate and the gas passes directly into the feeder and on to the district at peak periods, with any additional requirements flowing back in support along the feeder from the holders at Thornton. At other times, when the gas from the volumetric governor exceeds the district requirements, the surplus passes into storage.

(*To be continued*)

'BENZOLE makes good petrol better'

—say these experienced motorists



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Mr. Gunton—Proprietor of Gunton's Motor School, 19 Timberhill, Norwich.

'I've proved that National gives more power and more m.p.g.' says Mr. J. J. Mangnall—Chauffeur/Courier since 1945 with the well-known London firm, Daimler Hire Ltd.* During the war, Mr. Mangnall served with the R.A.S.C., was previously employed as a chauffeur in private service. He has been driving for 20 years.

* Daimler Hire Ltd. use and recommend National Benzole Mixture for their fleet of "drive yourself" hire cars.

'National's my first choice for going places quickly.'

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With plenty of very good petrols to choose from, experienced motorists still prefer National Benzole Mixture. 'National' is more than a petrol. It is a carefully controlled blend of high-grade petrol and *British produced Benzole*. Benzole is a motor fuel in its own right—and a wonderful one. Drop for drop, it is more powerful than any petrol, and it has an exceptionally high anti-knock value. It turns the hammer-blow of the explosion into a long strong steady shove—giving the piston a powerful push instead of a sudden bonk. When Benzole is blended in the right proportions with high grade petrol (as it is in National Benzole Mixture) you get an ideal fuel for your engine—powerful, smooth in action, clean burning, and —best of all—*better for more miles per gallon.*

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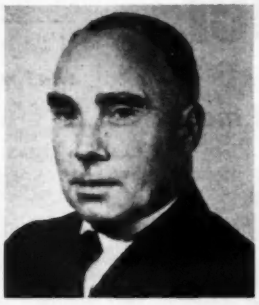
(*The distributing organisation owned and entirely controlled by the producers of British Benzole*)

TRADITION, LEGACY, AND AMBITION

FROM A PRESIDENTIAL ADDRESS TO THE WESTERN JUNIOR GAS ASSOCIATION AT BATH ON APRIL 24, BY

W. NEW,
Assoc.M.Inst.Gas E.

It seems to me that, in the sphere of education for the gas industry, a stage has been reached where the distinction between 'professional' and 'technical' must be more clearly defined. Under the new Regulations of the Institution of Gas Engineers, only those candidates above the average in intelligence or application will be likely to succeed in passing the Associate Membership Examination.



Should it not be recognised that there is a place on the technical staffs for those unable to reach the standard required for admission to membership of the Institution, but who can attain the requirements of the City and Guilds Technology examinations? This suggestion may appear to be reactionary. My belief is that, in the long run, it would prove of benefit to both employer and employee in the industry. An alternative to the National Certificate Course method of entry to corporate membership of the Institution is possession of a University Degree. As such graduates have already proved their ability to acquire knowledge and reach professional status, my remarks do not apply to them.

Broadly, people can be divided into two classes—the ambitious, and those who are reasonably contented with their lot.

The latter are often highly conscientious, but are lacking in initiative and unwilling to accept responsibility. A routine job with which they are thoroughly familiar is what they want. It must not be forgotten, however, that these people do in fact keep the wheels of industry turning. There are many posts on the technical staffs of the gas industry which can be admirably occupied by such men.

On the other hand, there are those to whom competition is the breath of life, who have a natural aptitude for learning, and who will make any efforts to earn a successful career. Again, such men form an indispensable part of any organisation.

It would be of advantage if entrants direct from school to the production and distribution sections of the industry were carefully selected and given a probationary period of, say, 12 months, to assess their capabilities and outlook before expending their time and, incidentally, some of the industry's money, on a lengthy course of study which may prove of no ultimate value to either. At the end of this probationary period they would either leave, take the City and Guilds course for the technology examinations, or embark on the Higher National Course for membership of a professional institution.

Thereby the technical staffs would be comprised of people mentally fitted and academically qualified to occupy higher executive posts, supported by a reserve of younger men ready to follow them. The routine work and minor supervisory jobs would be carried out by those who qualified in their particular sphere. The whole arrangement would make for a greater sense of contentment.

Working Efficiency

The gas industry will be judged by the cheapness of its therm. This is true enough. If the industry is to prosper we must use all endeavours to lower the cost of gas.

One legacy inherited from the past by the gas industry is a number of very solidly constructed works buildings, mostly about 50 years old. Nothing, perhaps, has contributed so much in years gone by to poor works lay-outs and meandering mains systems as the existence of these buildings, which by their appearance promoted the attitude of mind that they were there for all time, and that as the need arose they must be adapted for whatever purpose seemed suitable to their dimensions or siting. Calculation of the cost of their removal would doubtless lend support to this view. These ill-planned buildings have, in many instances, been a deciding factor when deciding on new plant installation. The proposition is, of course, unsound. A gasworks is essentially a sequence of plant and appliances for the manufacture of purified gas, and the fewer restrictions there are on their correct arrangement, the better their disposition can be. A minimum degree of permanence should be the aim for buildings enclosing constantly changing plant (consistent with obtaining a suitable return on capital outlay) in order to gain the advantage of improved techniques as they are developed. The appearance of a large, well constructed, and well proportioned building in traditional materials does, I appreciate, arouse feelings of satisfaction, but such a building may well stand for a century, while the plant it was built to house may be obsolete in less than 20 years.

I do not suggest that offices, messrooms, or similar buildings should be constructed in what may be termed 'short-lived materials'. But there are now many methods of construction, and investigation of the suitability of any particular type for the purpose in mind is bound to be well rewarded. In short, the design should be 'functional'.

Unframed Masonry and Steel Framed Structures

Unframed masonry is still probably the best form of construction for small buildings of a permanent nature where the occupants are engaged in sedentary occupations or where the contents require special protection from the weather. Considerable saving can be effected, however, by careful choice of roofing material. For example, a nearly flat roof in asbestos troughing can be installed approximately 50% to 60% more cheaply than an asphalted concrete roof. From experience, such a roof is thoroughly satisfactory.

Steel-framed structures may be erected in a variety of forms, with supporting stanchions carrying north light roofs, pitched trusses, or with roof and stanchions forming portal frames which can be either two-pin or three-pin or fixed base. Portal frames are particularly suited to gasworks use as they are formed of only one heavy steel member, thereby reducing maintenance and minimising the effects of corrosion. They are fabricated in this manner for spans up to 80 ft. and in a single-storey building of this span and 20 ft. height to eaves, for example, would be constructed of 18 in. by 6 in. rolled steel joists.

This form of frame has the advantage that it does away with the need for wind girders, and when the two-pin type is employed, as with a single-storey, sheeted building, the foundations need be only of sufficient size to take the dead load of the building.

At 80 ft. spans the weight of steel involved in each frame is appreciably higher than is the case with braced trusses, but at more normal spans of 40 ft. they are roughly equal in weight, and in both cases steel for eaves wind-bracing is saved. The fabricated price per ton is lower by about 10%. The area to be painted is rather less than two-thirds of a normal truss and is much more accessible. It is now common practice to employ metal spraying or galvanising before delivery. North-light roof frames are also constructed in this design, but their application to

gasworks use is normally limited to special sites. An interesting development in connection with this type of frame is the application of 'stressed-skin' technique for the roof structure, the two slopes actually being latticed girders, upon which the purlins are carried. By this method, with the north-light type in particular, very large areas can be covered with no supports except the outer frames or walls.

Cladding

All types of steel-framed buildings lend themselves readily to cladding with light materials; and for a great many purposes this form of covering is, in my opinion, quite suitable. Sheeting of this type is now available in many attractive forms complete with every type of accessory to make a weatherproof building. Provided it is not subjected to heavy impact, such material will withstand gasworks conditions for at least 30 years. It is, of course, desirable to build masonry walls at least up to ground-floor window level and to provide some form of wear-resisting lining, where necessary at other levels.

An alternative material now being used extensively by gas boards is corrugated aluminium. Sheets of this material have much to recommend them, being of good appearance, highly resistant to corrosive atmospheres, and, in one form, allowing of purlin spacings twice those of normal asbestos sheets, thus saving a proportionate amount of structural steel. With either of these forms of cladding there is a big saving in the weight of steelwork for high buildings compared with that required when brickwork is used for panelling only. Neither material requires maintenance painting, although some asbestos cladding is now supplied coloured or may be painted with special one-coat cement paint.

Comparative costs will, of course, vary greatly, and will depend upon the amount of special work and the size and height of buildings. As an indication, the erected costs per 100 sq. ft. of coverings would be in the region of:—

9 in. common red brickwork, pointed as laid, £18 (scaffolding extra).
4½ in. ditto, £9 (scaffolding extra).
Corrugated aluminium sheeting, £10-£11.
Asbestos cement, £5-£6.

The initial cost is not, of course, the only criterion. All sheeting-clad steel framed buildings have in common a high recovery value and low cost of removal with the possibility of erection on another site.

Reinforced Concrete

Reinforced concrete has much to recommend it. It has a clean appearance, under normal conditions there is little maintenance, and it does not require painting. It can be moulded to almost any shape and has applications difficult to fulfil with any other material.

On the other hand, no other form of construction suffers so greatly from careless or unskilled design or workmanship. Reinforced concrete should be used with discernment if unwarranted cost is not to be entailed. The reinforcement should always be called upon to perform its functions, and the structural strength of the composite material utilised, if money is not to be wasted. For instance, a non-load bearing concrete wall for space enclosure is of no more service than a brick wall which may quite possibly be built for less than the cost of the shuttering alone. Conversely, no other structural medium can be used to form a complete monolithic roof of 200 ft. unsupported span, as has been achieved in shell construction with concrete only a few inches thick and using about 50% of the steel needed for normal construction.

Shuttering is often the most expensive item in concrete construction, in many cases considerably exceeding the cost of the concrete and reinforcement. Arrangement for its repeated use, or elimination by adjusting slopes, well repays the additional care taken in design. Where steel formwork can be utilised, its cost may be 50% less than timber. For slabs, whether at ground level or overhead, for large underground tanks—particularly of circular form—and for piling, there is no doubt that reinforced concrete is superior to other forms of construction. It is usually claimed as an advantage of such construction that there is no maintenance. On the other hand, details in publications by firms specialising in repairs to this form of construction indicate that, at least on gasworks, the advantage claimed does not always hold.

Pre-stressed Concrete

This highly interesting technique, which has been applied to many spectacular structures, does not yet appear to have reached a stage, in this country, where it is a serious competitor on the grounds of cost to normal reinforced concrete, in spite of its seeming advantages.

The weight of the very small diameter high tensile steel wire employed is about one-third to one-fifth of that used normally, but this technical advantage prejudices me against the method (except, perhaps, the pre-tensioned system, which is not so applicable to our purposes as post-tensioned) under some of the conditions prevailing on gasworks. Pre-tensioned, pre-cast units such as beams, columns, etc., can, without doubt, be profitably employed in certain circumstances. One well-known firm manufactures floor slabs of this type which will take normal roof loading at 27 ft. span with a thickness of only 8 in.

The views of the local planning authority may have considerable influence on the materials to be employed and the appearance of the finished buildings where they are to be erected in a residential area. In normal cases, however, their requirements should not conflict with any of the types of construction outlined above.

With the imminent concentration of production into a few large manufacturing plants and the general grouping of all departments, the tendency towards specialisation is bound to receive added impetus. While this limits the field over which the ordinary technical assistant operates, it gives him a much more intimate knowledge of the particular branch upon which he is engaged. In consequence, he may be of greater service to those above him who, as a natural result of their more widespread responsibilities, cannot afford the time for study of details. The problem resolves itself into one of co-operation.

TREATMENT OF GASWORKS EFFLUENT

It is explained in the Report on Water Pollution Research for 1953, just issued by the Department of Scientific and Industrial Research (H.M.S.O., 2s. 6d.), that experiments have been continued at Stivichall, near Coventry, on the treatment of various liquors from Hinckley gasworks. Conditions at Hinckley differ from those at most gasworks, particularly in that retort-house liquor (which constitutes about 10% of the total volume of liquor) is disposed of separately, and in that the hot gas is treated in an electrostatic separator to precipitate tar before the liquor condenses. It had previously been shown that spent liquor from Hinckley (not containing retort-house liquor) was comparatively easy to treat in admixture with sewage. One of the aims of the work described in the report is to ascertain to what extent this is due to the electrostatic precipitation and to what extent to the exclusion of the retort-house liquor.

The composition of the two liquors from Hinckley is very different. Spent liquor contains a relatively high concentration of monohydric phenols. The retort-house liquor contains only about half this concentration but is rich in ammonium chloride and ammonium thiocyanate; it also contains relatively large amounts of those substances responsible for the 'difference' figure in the test for oxygen absorbed from permanganate, and it gives a high value in the burette aeration test.

In the previous report results were given which showed the effect of comparatively high concentrations of spent liquor from Hinckley on the treatment of sewage by biological filtration. Some further results are given in the present report, which refers to a period during which one of the large filters at Stivichall treated settled sewage only and the other treated Hinckley spent liquor in a proportion of 2.56% by volume of the dry-weather flow. In this concentration the effect of the liquor was to increase the permanganate value of the effluent by about 80% and to reduce the amount of oxidised nitrogen in the effluent by about 35%.

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NEW WORLD Consumer Advertising is now featuring Patricia Cutts, currently appearing in T.V.'s 'Down You Go' programme.
On the opposite page is an advertisement for the **NEW WORLD RANGE** which will appear IN FULL COLOUR OR BLACK AND WHITE in these popular magazines with a ***Total circulation per month of over 1,750,000 readers.***

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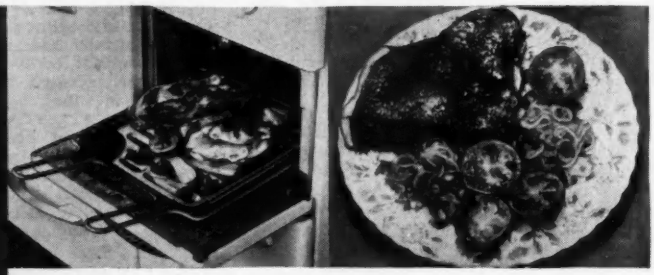

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- ★ REGULO CONTROL
- ★ FINE-CONTROL SAFETY TAPS
- ★ 4-BOILING BURNERS
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FITS INTO ALMOST ANY KITCHEN !!!

Your friends will be surprised—and so will you, when they see how beautifully the **NEW WORLD** Gas Range, only 36½" wide, fits into your kitchen. If you have any doubts about it let us send you a full-colour leaflet and kitchen-floor plan—All free of charge.

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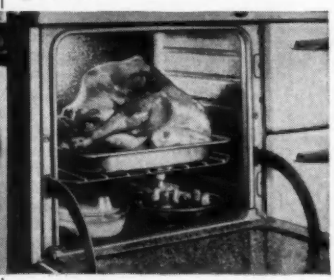

THE GRIDDLE. On this unusual hotplate feature you can cook Griddle Cakes, Pancakes and Drop Scones. The Griddle can also be used for simmering, leaving the hotplate burners free for other purposes.

THE OVEN. Two dishes can be placed side by side or a 22-lb. turkey roasted in this well proportioned family size oven. Heat is controlled by the Regulo, which eliminates all guess-work from cooking in the oven.

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COMPANY MEETING

PARKINSON & COWAN, LTD.

Increased Dividend : Sir George Jessel's Address

The Fifty-fourth Annual General Meeting of Parkinson & Cowan, Ltd., was held on May 7 in London.

SIR GEORGE JESSEL, BT., M.C., the Chairman, in the course of his address, said: In my speech at the last Annual General Meeting I did not hold out expectation that 1953 would show substantial improvement over 1952, which the shareholders will remember as a recession year in our industry. My forecast proved substantially correct in respect of our trading profits, which were £330,000, against £350,000 for 1952. Our consolidated net profit at £145,000 (£75,000 last year) has benefited from taxation adjustments which have resulted from the partial execution of our policy to wind up subsidiary companies.

Having paid our normal Preference Dividend, absorbing £19,000, your Directors recommend a Dividend of 9% on our Ordinary Capital, an increase of 2% on the 1952 distribution. This recommendation has been made in the light of several factors. Firstly, the improvement in trading which started in the autumn of last year is well maintained at this date. Secondly, the Company's finances and prospects seem to us to justify this step. Thirdly, and not the least, we think that the proprietors of the Company are entitled to expect a measure of protection against the diminishing value of money. As our balance sheet shows, your Directors have sought to make this Company a safe investment; they also seek within the same confines of prudence to make it a remunerative one.

The remainder of the consolidated net profit amounting to £89,000 is suggested to be disposed as follows.

Although no less than £118,000 is charged in these accounts against depreciation, we propose to create a Fixed Assets Replacement Reserve and to credit thereto an initial sum of £50,000.

During the year we acquired the remaining half-interest in our previously jointly-owned South African Company. This action converted this Company into a wholly-owned subsidiary; consequently we took into our consolidated accounts some accumulated losses and wrote down our investment in that subsidiary by £18,000. This action contained an element of anomaly because our other overseas investments had a market value some £70,000 higher than their book value. It seemed rational, therefore, to adjust the valuation of these other investments upwards by, roughly, a corresponding amount. This explains the item of £20,000 credited to Capital Reserve. After this operation our overseas investments remain at a market value £50,000 above their balance sheet valuation.

Value of Equity

Shareholders will note that the book value of each £1 Ordinary Stock, excluding goodwill, now stands at 36s., compared with 28s. 5d. in 1949.

Consolidated Balance Sheet

Apart from the matters already touched upon, there remain a few items worthy of note. Stocks have been reduced by £111,000 odd and cash is down by £30,000. Net fixed assets have increased by £70,000 and this reflects our policy in continuously improving the quality of our mechanical equipment.

Prospects for 1954

The year started with nearly all our factories in high activity and operating at a sound level of profit. Our leather interests, which suffered a severe set-back in the last two years, remain a source of anxiety. Our gas, water, and electricity meter companies are doing well. Our gas appliance factory is very active and production of paraffin burning goods is brisk. It is not easy to forecast future trends, but so far as I can see we should enjoy a good year in 1954.

The Report and Accounts were adopted.

The retiring directors, Mr. R. Connor and Mr. C. H. Pearson, were re-elected and the Chairman concluded with a tribute to the Managing Director, Mr. H. P. Barker, and to the staff and workpeople. No fewer than 240 of the latter have served the Company for more than 20 years.

COMPANY NEWS

WELLINGTON GAS

The 84th annual report and statement of accounts of the Wellington Gas Company, recommends a further dividend of 3%, making a total of 6% for the year. The revenue for the year again reached record figures, amounting to £613,699—an increase of £20,923 over the previous year. This increase, however, was not reflected in the net profit, which amounted to £19,69. After the payment of the unchanged dividend, a balance of £18,741 will be carried forward. The depreciation written off for the year was £34,155. Capital expenditure for the year amounted to £42,696.

RAWLPLUG

The Directors of the Rawlplug Company, Ltd., have recommended the payment of a final dividend on the ordinary shares of 40%, less tax, for the year ended December 31, 1953, and a bonus of 5%, less tax. This payment, together with the interim dividend of 15% already paid, makes a total ordinary dividend of 55% and a bonus of 5% for the year, making a total distribution of 60% against 55% for the previous year. The net profit of the parent Company for the 12 months to December 31, 1953, after charging profits tax and excess profits levy, but before making provision for future income tax, amounts to £258,600 compared with £234,137 for the previous year. The net profit of £258,600 together with the balance brought forward of £313,173 makes a total of £571,773 to be dealt with.

LONDONDERRY GASLIGHT

At the 78th annual general meeting of the Londonderry Gaslight Company, the Chairman of the Board of Directors, Captain B. F. McCorkell, said that after providing for estimated taxation, the profit for the year amounted to £11,980, which was a reduction on the previous year. From this sum transfers had been made to the special purposes and renewal funds. The smaller profit was mainly accounted for by a slight reduction in the sales of gas and further increased costs of coal, transport and wages during the year. The basic price of gas was not altered. The recent steep increase in coal freight rates, coupled with an increase in wages, left no alternative but to raise the price of gas 1d. per therm. The small decrease in the consumption of gas was due to the fact that in the first and last quarters of 1953 the weather was exceptionally mild. The Company had financed the continual expenditure in providing gas supplies to all the new housing estates and demand for gas continued undiminished. The increase in gas output for the first two months of the current year had far exceeded that of any comparable period in the history of the Company.

AUCKLAND GAS

A dividend of 3% for the year ended December 31, 1953, was declared at the 92nd annual meeting of the Auckland (New Zealand) Gas Company. The balance of carry-forward at credit of profit and loss after deducting the dividend paid in March, 1953, is £7,339. Profit for the year, after the deduction of various charges, is £16,788. This leaves a balance of £24,127 to be dealt with. After the distribution of the dividend, this will leave the sum of £8,157 to be carried forward.

BRITISH VACUUM

The Directors of the British Vacuum Cleaner and Engineering Co., Ltd. report with regret that since the termination of the financial year Mr. Seymour Booth, owing to indifferent health, has retired from the Board. They place on record their appreciation and thanks for the services rendered to the Company by Mr. Booth during his period of office as an Executive Director of the Company for over 30 years. Trading conditions in the early part of the year were abnormal and exceptionally adverse. These conditions substantially improved during the latter part of the year and the improvement has since been maintained. In view of this the Directors recommend payment of the usual dividend. The balance of profit brought forward from last year is £91,618, to which is added a surplus on sale of freehold land and buildings of £217,803 and reserves for taxation no longer required £44,236, making a total of £353,707. The net trading loss for the year after taking credit for profits of subsidiary companies to the extent only of dividends declared was £36,190, and depreciation written off was £26,362 (£62,552 in all), leaving a balance of £291,155. After payment of dividend there is a balance to be carried forward of £50,044.

Institution of Gas Engineers

Annual Meeting of the Manchester Section

The annual meeting of the Manchester and District Section of the Institution of Gas Engineers, held in Manchester on April 30, was preceded by a luncheon. Among those attending were Mr. D. P. Welman, Chairman of the North Western Gas Board, and Dr. R. S. Edwards, Chairman of the North Eastern Board. They were welcomed by the retiring Chairman, Mr. A. K. Collinge.

Mr. **Collinge**, after paying a tribute to the work of the sub-committees of the Section, referred to the continued monetary needs of the Benevolent Fund and the urgency of more support. An impression had been created, he said, that the welfare provided by the State, such as it was, reduced the necessity for the Benevolent Fund. That was far from being the case. Last year assistance was granted to 27 dependents as against 24 the year before. During the last 10 years the annual amount distributed had just about doubled, clearly indicating the necessity for the fund. Had it not been for a special donation of £500 to mark Coronation Year, the fund would not have been in a very good position.

Introducing the new Chairman, Mr. Collinge said Mr. Johnston was a person he held in the highest possible regard. He had proved himself well worthy to hold the office he was about to take over. As the year progressed he felt sure the members would be as conscious as he himself had come to be of Mr. Johnston's many qualities. The prestige of the Manchester Section could not be better upheld than it would be, and he wished him a successful and happy year of office.

Responding, Mr. **Johnston** thanked Mr. Collinge for his splendid services as Chairman. He had put in a great amount of work for their benefit, had carried out his duties with distinction, and had always been most courteous and helpful.

He then presented Mr. Collinge with the Past-Chairman's badge and with a gold watch as a mark of the esteem of the Section.

Dr. **Edwards**, in support, recalled that at vesting day Mr. Johnston had been called upon by the Board to take on and build up quite a new feature of the activities of the gas industry in the North West. All he was given was a part of what had hitherto been a warehouse, a small personal office, and told to get on with the job. He was handed a lot of projects, some of which had not even been nurtured within the area covered by the Board, and asked to complete them. That, said Dr. Edwards, was a pretty tough assignment at a time which abounded in capital, material and personnel shortages. From that day to this, Mr. Johnston had had the unlimited confidence and support of the Board and had, they believed, done the job as very few other men in the country could have done it—to their entire satisfaction. A great many difficulties had been overcome by his technical skill. His job demanded not only technical ability, however, but consummate skill and diplomacy.

On behalf of the North Eastern Gas Board, Dr. Edwards invited the Section to visit Bradford on July 2, as guests of the Board at luncheon and to pay a visit of inspection to the Birkshall works. Mr. Johnston had had a lot to do with the modernisation of those works. They were also invited to tour the new works at Tingley, early next year, along with members of the North of England Section of the Instittion.

Members elected by ballot to fill three vacancies on the Committee were Messrs. W. B. Harrison, J. G. Tilley and F. Bell.

Mr. H. Johnston then read his Presidential Address (published in the 'JOURNAL' of May 5, pp. 307-311, and concluded in this issue, pp. 363-364).

AUDITORS' REPORT ON COLERAINE GAS

Coleraine Borough Council at a special meeting considered the trading accounts of the Council's gas undertaking in respect of the 1951-52 and 1952-53 financial years. The accounts, together with the auditors' reports were adopted. The auditors' further report on their investigation of the former gas collector's department was considered in committee.

In the report the auditors stated that it was apparent from comparisons that the income from the sale of gas and residuals had risen considerably, and that the cost of manufacture had also increased.

Management expenses and interest charges also tended to rise. With the extension in the area covered and the increase in the number of consumers served by the undertaking, considerable capital outlay had been incurred over the two years on extensions and improvements at the gasworks, on mains and services, and on additional meter installations. Corresponding increased indebtedness and loan repayments to the Ministry of Finance in respect of mortgage loans to assist the financing of these extensions and improvements had occurred, while the current account overdraft also showed a decided increase.

Replying to a request by the Council for permission to pay interest to the bank on an overdraft of up to £20,000, the Ministry of Health and Local Government wrote agreeing to this for a period up to June 30 next, and stating that the extension was granted on the distinct understanding that the Council would give immediate consideration to increasing the price of gas sufficiently to have the overdraft cleared. The Town Clerk, Mr. W. E. Henry, M.B.E., said the overdraft at March 31 last was £11,601 compared with £16,472 at March 31, 1953.

Mr. W. R. Armstrong, Gas Manager, said he reckoned that in the current year they would have to increase their income by about £3000 to cover higher costs, including wages and coal.

Replying to a question, the Clerk said the last increase in the price of gas was 5d. per 1,000 cu.ft. in April, 1953.

Also answering questions, the Gas Manager said the revenue from the sale of residuals would not go anywhere near meeting the increase in the cost of coal, but it certainly helped, and that was why they had been able to keep going.

Submitting a proposal for a reduction in the price of gas, Alderman J. D. Murphy said he believed there was a case for a reduction in price to prepayment consumers, and there was one section of consumers which deserved the most urgent consideration towards immediate relief—the old age pensioners. On the suggestion of Councillor T. K. Caldwell, O.B.E., the matter was adjourned until the Council had before them the accounts for the financial year ended March 31, 1954.

The Cardiff Undertaking was recently asked to assist an elderly couple, both suffering from failing eyesight. The request was to replace the standard thermostat head on their cooker with a Braille type. Communications to the makers concerned met with the response that Braille type thermostat heads for that particular type of cooker were not practicable. The matter might have ended there but for the good offices of a Cardiff fitter who, having heard in a quite roundabout way of the predicament, produced in his own time and at his own expense, a thermostat head suitably marked with the Braille numerals. It is such service which maintains and enhances the undertaking's reputation among its consumers.

Western Juniors at Bath

The annual meeting of the Western Junior Gas Association at Bath on April 24 was well attended and was honoured by the presence of Mr. C. H. Chester, C.B.E., Chairman of the South Western Gas Board. A tour of the gasworks was followed by a business session at which the President of the Association, Mr. W. New (Coxside, Plymouth) delivered his address.

Officers for the 1954-55 Session were announced:—

President.—F. G. Graxford (Taunton).
Senior Vice-President.—A. G. Gaston (Bath).
Junior Vice-President.—D. J. Maunder (Torquay).
Hon. Secretary.—S. W. Hayes (Barnstaple).
Hon. Treasurer.—T. A. Nicholson (Weston-super-Mare).
Hon. Transactions Secretary. K. G. Pemberton (Torquay).
Hon Auditors.—H. Beacham and R. Pratt.
Members of Council.—J. B. Taylor (3 years); W. E. Baggs (3 years); F. Tweedle (1 year).

The President announced the election of Mr. W. Dean (Engineer and Manager—Plymouth and Cornwall Division) as an Honorary Member. It was also announced that Mr. J. Parker (Bristol) had been awarded the Silver Medal of the Society of British Gas Industries.

Mr. Chester presented prizes as follows:—

Honorary Members' Prizes:—
1st Prize—J. Parker (Bristol).
2nd Prize—R. Pratt (Taunton).
Students' Day Prizes:—
1st Prize—H. Furzeman (Plymouth).
2nd Prize—M. Gillett (Weston-super-Mare).

Two special additional prizes were awarded to J. Glanfield (Exeter), and D. E. Philps (Torquay).

Midland Juniors' Annual Meeting

Mr. H. J. Reynolds Elected President

After nine years as Hon. Secretary of the Midland Junior Gas Association Mr. H. J. Reynolds (Wolverhampton) becomes President of the Association for the session beginning in the autumn. Mr. D. R. Devey, also of Wolverhampton, has been elected Secretary. The annual meeting was held in Birmingham on May 4 under the chairmanship of the outgoing President, Mr. J. A. Tomes, Stourbridge.

MR. S. BROCKBANK, Hon. Treasurer, reported a membership of 430.

MR. REYNOLDS proposed a vote of thanks to the retiring members of the Council, Mr. J. Palser (Birmingham), Mr. D. J. O. Bath (Oxford) and Mr. C. B. Jones (Halesowen). He said he did so with some regret because all these members had rendered outstanding service to the Association, and he was sorry they would be derived of their services next year.

MR. S. C. CRATHORN (Birmingham) said he shared Mr. Reynolds' feelings but it was good to know that they would still have their support as members of the Association, and Mr. Jones would continue as master of ceremonies.

MR. PALSER said it was a sad moment for him because it was the close of a chapter which had extended over nine years. He expressed appreciation of the support which he received from everyone in the Association.

MR. JONES said he was sure Mr. Bath would wish to be associated with his remarks, and he would only say that to serve on the council of the Association was such an honour that he thought he ought to thank them.

MR. TOMES added his personal thanks to the three members who were retiring.

Two vacancies on the Council were filled by the election of Mr. A. Griffiths (Dudley) and Mr. R. S. Gascoigne (Smethwick).

The PRESIDENT proposed a vote of thanks to the officers on whom, he said, the Association depended and without whom it could not function. The fact that it did so successfully was due to the hard work and ability of the officers.

Officers for the ensuing year were elected as follows: Hon. Treasurer, Mr. S. Brockbank; Hon. Auditor, Mr. R. L. Shaw; Hon. Transactions Secretary, Mr. L. H. Hardy; Hon. Secretary, Mr. D. R. Devey.

Educational Activities

A report on educational activities during the past year stated that the last Higher Grade examinations under the old education scheme were held in 1953. The results were extremely poor. Of 171 entries for the Higher Grade (Manufacture) there were only two first class passes and 51 second class. The corresponding figures for the Supply Examination were: 128 entries, no first class passes, 36 second class passes. Thus, passes amounted only to about 30% of the total entries.

Among the major criticisms made by the examiners—of which it was urged that students and teachers should take particular note—were: (1) Lack of familiarity with matters contained in the Technical Press; (2) use of abbreviations in answers; (3) lack of knowledge of fundamental principles; and (4) failure to read questions carefully.

It was not yet possible to report on the Associate Membership examination since entries had only been small in number. The first major entry was expected in 1955. With regard to the City and Guilds Technological Examinations, while a reasonable number of passes were obtained, the examiners suggested that the syllabus was not being adequately covered.

Preparation of correspondence courses by the Civil Engineering Correspondence College in both Gas Manufacture and Supply to Associate Membership standard had been widely publicised during the year. Unfortunately there appeared to have been so little support for this project that it seemed likely to be abandoned.

MR. D. J. WARD (Birmingham) proposed a vote of thanks to the educational representatives whose work, he said, was perhaps not properly known and appreciated but it was very necessary. The Association representatives on the Midland District Education Committee were re-elected as follows: Mr. W. Macnaughton, Mr. F. L. Atkin, Mr. W. H. Clarke and Mr. A. W. Sanders.

It was announced that the Council had extended an invitation to Mr. J. A. W. Stretton (Wales Gas Board) to become Junior Vice-President.

Two films loaned by the Esso Petroleum Co., Ltd., 'Let's Go For'ard,' and 'Fawley Achievement,' were shown after the meeting.

TORQUAY CAREERS EXHIBITION

An exhibition designed to show young people careers available in local industry and commerce was recently held at the gas showrooms of the South Western Gas Board at 112, Union Street, Torquay. The Rotary Club was responsible for its organisation and during the three days the exhibition was open it was visited by 2,479 people.

The stands included displays installed by the Gas Board, Standard Telephones and Cables, Ltd., and the Torbay Hospital.

Our photograph shows the stand devoted to the catering industry, one of the most important in the Division.

News in Brief

We Regret that an incorrect B.I.F. stand number appears in the Crane, Ltd., advertisement in the 'JOURNAL' for May 5, p. 266. It should read Stand D.314, Castle Bromwich.

The Institute of Public Administration will now be known as the Royal Institute of Public Administration, announced Viscount Waverley, the President, at the annual general meeting.

The Factories of George Kent, Ltd., at Luton, Resolven and London, will be closed for the annual works holiday from Friday evening, July 16, to Tuesday morning, August 3. Offices at all factories will remain open and staffed during the holiday.

Southport.—Delegates to the Gas Sales and Service Conference on May 19-20 are reminded by the Gas Council that admission to the conference is by ticket only. Applications for tickets and for full sets of the papers should be made *at once* to the Publicity Manager of the Gas Council.

We Stated in the 'JOURNAL' of April 28 that Mr. T. B. V. HIRST and Mr. PAUL WERTHEIMER are Directors of Tekon, Ltd. We have since been informed that the interests of the firm include exploration and promotion of improvements relating to domestic and industrial appliances for town gas, natural gas, and liquefied petroleum gases, both in this country and overseas. Ancillary to this is the provision of safety devices and controls of many kinds and of bimetallic materials and elements. On the score of accuracy, Mr. Hirst was Manager of the technical department of Ascot Gas Water Heaters, Ltd., from 1933 to 1943, and was then with De La Rue Gas Development, Ltd., and Thomas Potterton (Heating Engineers), Ltd., relinquishing his appointment as Chief Engineer to both companies in 1948. Mr. Wertheimer has been closely associated with gas appliance development, including sales and service as well as design, in a number of countries from 1923 to date. In 1948 he relinquished his appointment as Head of Research to De La Rue Gas Development, Ltd., and Thomas Potterton (Heating Engineers), Ltd.

Trade News

New Paint Stripper

A new type of paint stripper is available under the name of 'Arnolite.' It is a powder, mixed into paste form for use. 'Arnolite' has remarkable features. The manufacturers inform us that it removes five coats of oil-bound paint or distemper 'at one go' in 30 mins. No rubbing, scraping, or attention is necessary once applied to the surface.

'Arnolite' is non-inflammable, has no fumes, and can be used anywhere, even in confined spaces. It contains its own protective agent for the skin. It can be applied to vertical surfaces as well as flat, without waste.

'Arnolite' is distributed throughout Great Britain by *Industrial & Commercial Agencies, 24, Garlick Hill, E.C.4.*

Draught Control

The Metropolitan Engineering Co., Ltd., having pointed out that the Lancashire boiler and setting store the heat equivalent of two to three full steaming hours, sends us particulars of 'Metro-Flex' draught control. The control is designed to retain this heat and to use it for steam generation, while, in ordinary practice, it is allowed to go to waste during stoppages. Thus, the boiler and setting remain hot after an overnight or weekend shut-down, and smoke nuisance in conjunction with a cooled-down boiler does not occur.

The firm goes on to say that banking can be entirely eliminated by retaining this stored heat, but the boiler will remain hot, under pressure, and ready for a flying start when required. Because no fuel need be burnt to keep the boiler hot, or to re-heat it after shut-down, it is claimed that 'Metro-Flex' control quickly proves an economic proposition.—*Metropolitan Engineering Co., Ltd., 47, Whitechapel High Street, E.1.*

Argon Arc Welding

New Murex zirconiated tungsten electrodes have recently been developed for use in the argon arc welding process. These electrodes have the important advantage of greater resistance to contamination than the pure tungsten and thoriated tungsten electrodes which have hitherto been generally used in this welding process.

Electrodes used in argon arc welding are in theory non-consumable, i.e., they do not contribute to the weld metal. However, in practice, considerable wastage occurs mainly owing to the regrinding which is necessary to keep the electrode tip free from contamination.

The zirconiated tungsten electrode has now been developed as a further advance in this type of electrode. Even if the zirconiated electrode is deliberately allowed to touch the molten pool and the filler wire during welding, contamination although present, does not 'wet' the point of the electrode and form a globule on the tip as in the case of pure tungsten and thoriated tungsten rods. It is, in fact, possible to continue welding with zirconiated electrodes after contamination, when in similar circumstances, pure tungsten and thoriated rods would require immediate regrinding. Zirconiated electrodes are slightly higher in price than the tungsten types, but users of these electrodes who know that wastage due to regrinding is far greater than burn-off in the arc, will appreciate the saving achieved by using the zirconiated type.—*Murex Welding Processes, Ltd., Waltham Cross, Herts.*

Flameproof Switchgear

A new range of flameproof switchgear has been developed by the General Electric Co., Ltd., for use in gasworks engineering industries generally as well as the chemical industry. It can also be employed out of doors and for any application requiring an exceptionally robust installation.

The equipment complies fully with B.S. 229, 1946 (flameproof enclosures of electrical aparatups) and with B.S. 861 (air-break switches). All the units have been tested by the Research Establishment of the Ministry of Fuel and Power at Buxton, and are certified flameproof (FLP) for Groups 1, 2, and 3, as defined in B.S. 229, 1946.—*The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.*

Anti-Corrosive Paints

Non-setting paints which retain indefinitely a semi-plastic condition have been in use for some time under conditions where the primary requirement has been impermeability to moisture in addition to anti-corrosive properties. Typical uses have been in the protection of water-sealed gasholder lower lifts. One paint of this type, known under the name of 'Humidine,' is used in practically every gas undertaking in the United Kingdom.

Non-setting paints, having semi-plastic characteristics, do not suffer from cracking, and the covering is absorbed by the pores in the steel surface. Even if the surface of the steel becomes scored, the paint will migrate by capillary action into the newly exposed metal. A single coat only is required, which may be applied by brush or spray. Full information is available from Aspinalls (Paints),

TRADE PUBLICATIONS

An illustrated catalogue just published *by Lancashire Dynamo & Crypto, Ltd., Trafford Park, Manchester, 17,* deals with A.C. industrial electric motors. It is packed with helpful data.

Among new literature is an illustrated booklet dealing with the additions and modifications to the Berger hydraulic starter. The leaflet is available from *Bryce, Berger, Ltd., Ironbarks Works, Staines.*

A concise and informative account of the development of the 'Segas' catalytic oil-gas process, which utilises heavy oil for the production of gases with characteristics similar to those of town gas has been published in most attractive form by the *Power-Gas Corporation, Ltd., Stockton-on-Tees.*

Of exceptional merit is a new publication entitled 'Our National Heritage' issued by the National Benzole Co., Ltd. The standard of photography and the general layout is very high indeed, and the whole is of absorbing interest. Copies can be obtained free from the *Publication Department, National Benzole Co., Ltd., Wellington House, Buckingham Gate, London, S.W.1.*

From *Tubewrights, Ltd., Egginton House, 25, Buckingham Gate, London, S.W.1* (a subsidiary of Stewarts & Lloyds), we have received a useful brochure dealing with the advantages of tubular steel. Tubewrights have evolved the convertible 'Pallage' system by which a wide range of materials handling equipment can be built up from standard components. This is described in the booklet.

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Ever since 1913 "PERMAC," the original Metal-to-Metal jointing, has been holding up difficult joints in Gas Works and on Coke Oven Plants all over the world. Equally suitable for any joint—steam, water, gas, oil, benzol, ammonia, etc.—screw pipe or flange.

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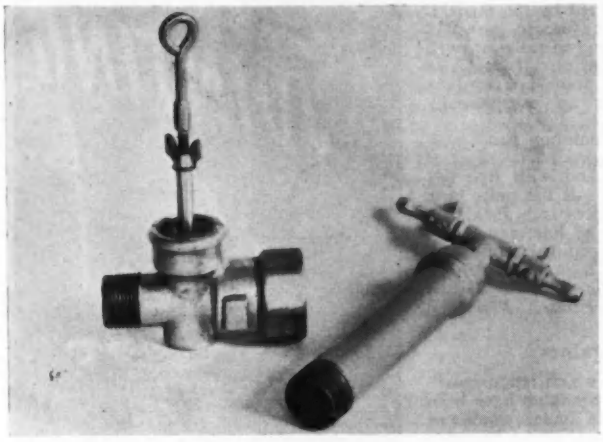

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is accepted from the provisions of the Notification of Vacancies Order, 1952.

TECHNICAL MANAGER with experience in the design and manufacture of Gas Appliances required by company in the North of England. This position is an excellent opportunity for a person with the requisite ability, initiative and drive. Replies, which will be treated in strict confidence, should give full particulars of academic and practical experience, and some indication of salary required. Apply: No. 195, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

BRIGHTON EDUCATION COMMITTEE

PRESTON TECHNICAL INSTITUTE
Principal: L. W. PALMER, M.A., B.Sc.

ASSISTANT LECTURER (Grade 'A') for GAS FITTING THEORY AND PRACTICE required from September next. Burnham Technical Scale, at present £415 × 18–£670 with allowances for degree and training. Application forms obtainable from the undersigned on receipt of stamped addressed foolscap envelope to be returned to the Principal within fourteen days.

W. G. STONE,
Director of Education.

54, Old Steine,
Brighton.

WALES GAS BOARD

RHYL UNDERTAKING AND CLWYD AND DEESIDE GROUP
SALESMAN/CANVASSER

APPLICATIONS are invited for the post of SALESMAN/CANVASSER in the area of the Clwyd and Deeside Group.

The successful applicant will be required to reside in the Holywell/Flint area.

Salary will be within Grade B (Provincial A) (£395/£475 per annum) commencing salary will be determined by age and experience.

The successful applicant will be required to pass a medical examination and to subscribe to the Board's Superannuation Scheme.

Application, stating age, experience, together with the names and addresses of two referees, should be received by the undersigned not later than May 22, 1954.

O. P. ONSHAW,
Chairman,
Clwyd and Deeside Group.

Gas Offices,
93, Wellington Road,
Rhyl.
April 28, 1954.

(*Classified Advertisements continued* page 382)

NOTICE

NORTHERN GAS BOARD

GAS CHARGES

THE Northern Gas Board hereby gives notice of alterations in its Gas prices and tariffs for gas supplies based upon the principles set out in the Statement of General Policy dated September 21, 1949, and published by the Board on or about October 10, 1949 (copies of which are available at every Showroom throughout the Area).

The new prices make provision to cover increases in coal prices, railway charges, salary and wage rates, and the cost of materials.

In each section of the Board's Area of supply the "Published Price" for that section as set out in the Schedule hereto, will apply, and the basis of the actual charges for gas supplied will be in accordance with the following tariffs:

Price per therm	Each Winter Quarter*	Each Summer Quarter†
The Published Price	For the first 30 therms supplied through one service pipe or meter.	For the first 30 therms supplied through one service pipe or meter.
Two thirds of the Published Price.	For all gas in excess of that charged as above, up to a total of 5,000 therms supplied to any one consumer at any one set of premises.	For all gas in excess of that charged as above, up to a total of 2,000 therms supplied to any one consumer at any one set of premises.
Three fifths of the Published Price.	For all gas in excess of 5,000 up to a total of 10,000 therms supplied to any one consumer at any one set of premises.	For all gas in excess of 2,000 up to a total of 4,000 therms supplied to any one consumer at any one set of premises.
Fifty-two and one half per cent. of the Published Price.	For all gas in excess of 10,000 therms supplied to any one consumer, at any one set of premises.	—
One half the Published Price.	—	For all gas in excess of 4,000 therms supplied to any one consumer at any one set of premises.

The new prices will commence in respect of each consumer's accounts from the date of his meter reading first taking place after this announcement.

The foregoing prices will apply to gas used for all purposes, with the following exceptions:—

(1) A supplementary charge of 1½d. per therm will be payable in respect of all gas up to 30 therms per quarter supplied through prepayment meters, to cover the additional inherent costs associated with such supplies.

(2) An additional supplementary charge of 1d. per therm will be payable in respect of all gas up to 30 therms per quarter supplied through prepayment meters to consumers where the Board provides fittings or apparatus for their use.

(3) Existing special agreements will continue in accordance with their terms until their normal expiry dates or formal termination. Further special agreements will be made available to meet those circumstances where the tariff is not appropriate.

(4) Upon the termination of any special agreement relating to gas supplied for public lighting purposes, the charge for gas supplied thereafter for such purposes will be in accordance with the tariff, but will be subject to a special discount of 20% (in recognition of the lesser costs of accounting, absence of meters, etc.) on prompt payment. Provided that until further notice and subject to prompt payment, any Public Lighting Authority may elect alternatively to be charged for gas supplied in any quarter for public lighting purposes at a net flat rate of 14½d. per therm.

(5) All credit consumers' gas accounts will be payable net within 28 days of being rendered. Consumers entitled to be charged for part of the gas supplied to them at the lowest rate in the tariff (that is, at half published price in summer quarters or at fifty-two and one half per cent. of published price in winter quarters) will receive monthly statements of account, the third such statement in each quarter being adjusted as may be necessary to conform with the terms of the tariff. (See also 'Definitions').

(6) In certain sections of the Area charges will continue to be based upon the number of cubic feet supplied until such time as a calorific value has been declared, thereby enabling the thermal basis of charge to be adopted. Meanwhile it will be assumed for the purposes of the tariff that 1,000 cubic feet are equivalent to 4½ therms.

(7) In order to ensure some return upon its services and equipment in cases where gas is retained as standby supply, the Board is empowered to impose a minimum payment each quarter. The amount of this payment will be equivalent to three per cent. of the present cost of a meter of the size installed. (The approximate payment in respect of a meter of normal domestic size will be about 2s. 6d. to 3s. therefore where gas of less than this value has been used in any quarter the minimum payment will be required.)

(8) It is a condition of the provision of a gas supply that each consumer is responsible for the safe custody of all meters, fittings and apparatus owned and provided upon his premises by the Board, and for the restoration of all damage thereto, fair wear and tear excepted. Where gas is supplied through a prepayment meter, it is also a condition that the consumer is responsible for the safe custody of moneys lying therein, and liable to make good to the Board on demand any deficiency in such moneys from the sum owing to the Board. Only current coins of the Realm may be placed in a prepayment meter, and all moneys so placed thereupon become the property of the Board.

DEFINITIONS (applicable only to large non-domestic consumers).

Month	shall mean the period between two meter readings taken on the last Wednesday (or as near thereto as practicable) in each of two successive calendar months.
Quarter	shall mean three successive periods of one month (as above defined).
†Summer Quarter	shall mean a quarter (as above defined) which falls wholly or mainly within either the calendar months of April, May, and June, or July, August and September.
*Winter Quarter	shall mean a quarter (as above defined) which falls wholly or mainly within either the calendar months of October, November and December, or January, February and March.

SCHEDULE OF PUBLISHED PRICES

BLYTH DIVISION	
Blyth	18d. per therm
Bedlington	18d. ,,
Morpeth	19½d. ,,
Alnwick	20½d. ,,
Shilbottle	22d. ,,
Berwick	22d. ,,
Newbiggin	8s. 7½d. per 1,000 cu. ft.
Wooler	22d. ,,
Amble	9s. 9d. ,,
Rothbury	9s. 9d. ,,
CARLISLE DIVISION	
Carlisle (and environs)	19½d. per therm
Brampton	23d. ,,
Wigton	8s. 7½d. per 1,000 cu. ft.
DARLINGTON DIVISION	
Darlington (and environs)	16½d. per therm
Bishop Auckland	16½d. ,,
Spennymoor and Sunderland Bridge	16½d. ,,
Newton Aycliffe	18d. ,,
Barnard Castle	20½d. ,,
Northallerton	20½d. ,,
Richmond	20½d. ,,
Crook	19½d. ,,
Bedale	8s. 7½d. per 1,000 cu. ft.
Leyburn	8s. 7½d. ,,
Masham	8s. 7½d. ,,
Stanhope	8s. 7½d. ,,
HEXHAM DIVISION	
Hexham	20½d. per therm
Corbridge	20½d. ,,
Stocksfield and Riding Mill	20½d. ,,
Prudhoe	18d. ,,
Haltwhistle	8s. 7½d. per 1,000 cu. ft.
Alston	9s. 9d. ,,
MIDDLESBROUGH DIVISION	
Middlesbrough (and environs)	16½d. per therm
Redcar	16½d. ,,
South Bank	16½d. ,,
Brotton	18d. ,,
Cleveland	18d. ,,
Guisborough	18d. ,,
NEWCASTLE DIVISION	
*Newcastle Urban Area	16½d. per therm
Newcastle Outer Area	18d. ,,

* (Urban Area includes:—Newcastle, Gateshead, Walsend, Gosforth, Longbenton, Newburn, Blaydon, Felling, Whickham, Hebburn, Tynemouth, Whitley Bay, Monkseaton, North Gosforth, South Shields, Jarrow, East Brunton, Birtley, Usworth and Boldon).

PENRITH DIVISION	
Penrith and Clifton	20½d. per therm
Keswick	21½d. ,,
Appleby	9s. 4½d. per 1,000 cu. ft.
Kirkby Stephen	9s. 4½d. ,,

Continued on p.382

NORTHERN GAS BOARD—Continued.

STOCKTON DIVISION

Stockton (and environs)	16½d. per therm
Hartlepools	16½d. ,,
Peterlee	18d. ,,

SUNDERLAND DIVISION

Sunderland (and environs)	16½d. per therm
Chester-le-Street ...	16½d. ,,
Durham	16½d. ,,
Houghton-le-Spring ...	16½d. ,,
Washington	16½d. ,,
Seaham	17½d. ,,
Stanley	19½d. ,,
Annfield Plain	20½d. ,,
Consett and Shotley Bridge	20½d. ,,

WORKINGTON DIVISION

Workington	16½d. per therm
Ennerdale	19½d. ,,
Cockermouth	19½d. ,,
Maryport	19½d. ,,
Whitehaven	19½d. ,,
Silloth	... 7s. 8½d. per 1,000 cu. ft.
Aspatria	... 7s. 8½d. ,,
Seascale... ...	... 9s. 9d. ,,

DATED this 10th day of May, 1954.

By Order of the Board,

JOHN F. JACKSON,
Secretary.

30, Grainger Street,
Newcastle-upon-Tyne, 1.

APPOINTMENTS VACANT (*ctd.*)

LONG established and well known firm of pipe-laying contractors invite applications for the positions of an AGENT, ENGINEER/SUB-AGENT, AND QUANTITY SURVEYOR to supervise contracts in the United Kingdom. Applicants should be prepared to travel and, in the first place, write giving details of their experience. Permanent employment and superannuation scheme for the right type of men. Apply: No. 192, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

TECHNICAL SALESMEN, aged 25 to 35 years, with sound knowledge of fuels up to A.M.Inst.F. standard and first-class experience of gas fired furnaces, required to develop the marketing of liquified petroleum gases in the industrial field. Excellent pension scheme. First-class conditions of employment. Commencing salary according to age and qualifications. Apply, giving full details of qualifications, age and experience, to: No. 194, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4. Replies can only be sent to those selected for interview.

REQUIRED, qualified chemist or chemical engineer for a position of responsibility in the Head Office (London) technical department of a leading oil company. Previous experience in the petroleum industry desirable but applicants with equivalent experience in other industries will be carefully considered. Age 30-40. Salary dependent on experience and qualifications. Excellent pension scheme and first-class conditions of service. Replies can only be sent to those selected for interview. Apply: No. 196, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4., with full details of qualifications and experience.

SCOTTISH GAS BOARD

SOUTH EAST DIVISION
DENNY DISTRICT
TECHNICAL ASSISTANT

APPLICATIONS are invited for the post of TECHNICAL ASSISTANT in the Denny District Undertaking.

Applicants should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers or an equivalent qualification and should have experience in the operation of continuous vertical retorts and ancillary plant.

The salary will be within the range of Grade A.P.T. III (Provincial B) of the National Salary Scale, £305-£475 with placing according to qualifications and experience.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the undersigned within fourteen days from the appearance of this advertisement.

D. PHILP,
District Manager.

Gas Engineer's Office,
Denny.

SOUTH WESTERN GAS BOARD

TECHNICAL ASSISTANTS ON
AREA SCIENTIFIC STAFF

APPLICATIONS are invited from qualified TECHNICAL ASSISTANTS and Gas Works Chemists for the above vacancies of which there are two.

The persons appointed will be based at the Area Scientific Headquarters, Bristol, under the control of the Area Scientist, and they will be required to visit Works in the Area for varying periods of time. Their duties will consist primarily of working in co-operation with the Technical Staff at the Works they may be visiting in connection with Retort House control, Fuel Efficiency, Purification and other technical investigations which may be required. The possession of the Higher Grade Certificate of the Institution of Gas Engineers in Gas Engineering (Manufacture) or an equivalent Chemical qualification is necessary.

The salary for the posts will be within Grades A.P.T. IX or X of the Salary Scales of the National Joint Council for Gas Staffs (£635-£790 per annum) according to the experience and qualifications of the successful applicants.

The successful applicants will be required to pass a medical examination and to join the Board's Pension Scheme.

Applications stating age, qualifications and giving particulars of training and experience, together with the names and addresses of two referees, should be sent to The Area Scientist, South Western Gas Board, Area Scientific Headquarters, Canon's Marsh Gasworks, Bristol, 1., not later than May 26, 1954.

WEST MIDLANDS GAS BOARD

BIRMINGHAM AND DISTRICT DIVISION
ENGINEER AND WORKS MANAGER,
SALTLEY GAS WORKS

THE WORKS has a capacity of 18 million cubic feet per day of coal gas in continuous vertical retorts, and 3 million cubic feet per day of C.W.G in an automatic plant.

The duties of the post will entail complete supervision of the Works involving control of technical staff and labour with full responsibility for maintenance, including the Washwood Heath Holder Station. Applicants must have had extended experience on a large Gas Works and have obtained a high standard of technical qualifications.

The successful candidate will be directly responsible to the Divisional Engineer.

The commencing salary will be £1,650 per annum rising to a maximum of £1,800 per annum

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

COOKERY DEMONSTRATOR. The Parkinson Stove Company invites applications for the position of Cookery Demonstrator. Applicants should possess a recognised Diploma in Domestic Science or equivalent qualification with considerable experience in cookery demonstration. These demonstrations often have to be given to outside organisations and applicants must also be prepared to travel although resident, or prepared to reside, in the Birmingham area. A flair for compiling and testing new recipes would be an advantage. Letters in confidence to Personnel Manager, Iron Lane, Stechford, Birmingham, 33.

NATIONAL COAL BOARD

EAST MIDLANDS DIVISION

APPLICATIONS are invited for a COKE OVEN MANAGER for modern plant, including gas purification, tar distillation and benzole rectification. Write giving full particulars of training and experience to the Administrative Officer, National Coal Board, Carbonisation Department, Grassmoor Collieries, nr. Chesterfield. Closing date May 31, 1954. Send copies of Testimonials and names of referees.

NATIONAL COAL BOARD

DURHAM DIVISION

APPLICATIONS are invited for two vacancies for ASSISTANT COKE OVEN MANAGERS at the Langley Park and Stella Gill Coking Plants. Duties at the latter plant will include control of a coal washery and the purification of gas for towns supply. Applications stating age and qualifications to be sent within seven days to Carbonisation General Manager, 'F' Floor, Millburn House, Newcastle-on-Tyne, 1.
May 3, 1954.

PLANT, &c. WANTED

WASTE MERCURY required: large or small quantities. Top prices: cash on collection London and Home Counties.—Belgrave Buyers (G.J.), 5, Belgrave Gardens, London, N.W.8. MAI. 7513.

MISCELLANEOUS

MOISTURE TESTING for coal, coke and ash and many chemicals. Modern method by 'SPEEDY' MOISTURE TESTER giving accurate percentage water in 2/3 minutes. Already in use extensively in Gas Industry. Needs no electricity. Portable, simple for use by unskilled labour. Write for illustrated brochure, or order direct, £24 10s. 0d. complete.—Thos. Ashworth & Co., Ltd. (Dept. G.J.), Basket Street, Burnley, Lancs.

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interest in a given commodity and enhance the potential of the Sales Staff. They can be used in a far more realistic way than black and white photographic prints to show off heavy machinery or a factory site. Understanding of blue-prints, service manuals, and the arrangement of complex machinery, cabling, piping, and lagging, to mention but a few examples, is made straightforward with the aid of 3-D colour slides. The foregoing remarks are addressed to the go-ahead Gas Managers, Maintenance Equipment Officers, P.R.O.s and Publicity Managers. It will not cost them more than a 'phone call or a 2½d. stamp to find out more about this medium which is an up-to-date rendering of a very old principle. Enquiries to: **Walter King Photography, 11, Bolt Court, London, E.C.4.**, who are always in the lead with the latest developments of photography. And to firms whose policy it is to present regular pictures by means of projected slides, we have also something to offer—on 3-D lines of course!

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A SPEEDY SERVICE
Sell to those best suited deal with them.
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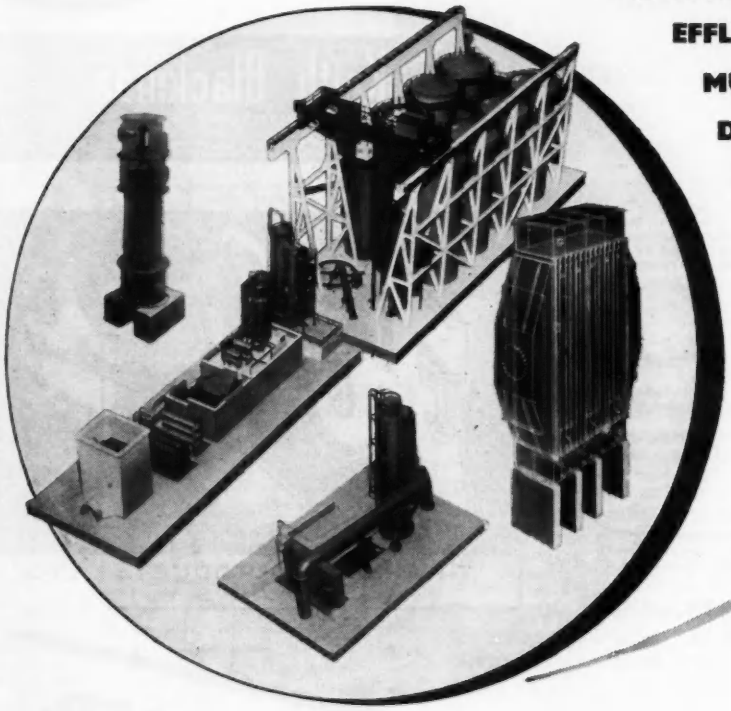

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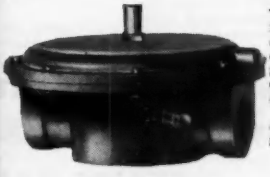
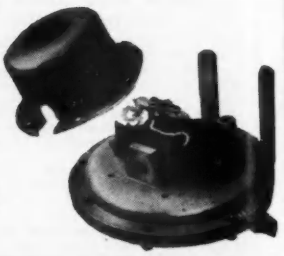
FOR CONTROLLING THE QUALITY OF AIR/GAS MIXTURE *irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
CAPACITY RANGE: *from 130 to 1,380 cub. ft. of gas per hour according to air pressure (¼ lb. to 1 lb.) and size. For low pressure gas systems.*
AIR INLETS: 1", 1¼", 1½" *and 2" dias. gas thread.*



THE SINGLE DIAPHRAGM AUTOMATIC SHUT-OFF VALVE *(illustrated left) automatically closes the gas supply in the event of pressure dropping below a predetermined point. Not until all burner cocks on the outlet have been shut and gas pressure restored is it possible to re-open the valve. This appliance is for operation on systems handling 150 to 2,400 cub. ft. of low pressure gas per hour.*

THE AUTOMATIC CUT-OFF SWITCH, *illustrated right, automatically breaks the electric supply to motor-driven gas boosters or compressors if low pressure gas falls below a predetermined pressure.*
RANGE: *Type 1 operates between .2" and 1.2" w.g. pressure.*
Type 2 operates between 1.2" and 5" w.g. pressure.
Type 3 operates between 5" and 15" w.g. pressure.
Additional applications include its use as (a) an air flow switch in conjunction with a flame failure device and (b) a gas meter protector.



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BRANCH OFFICES AT MANCHESTER BIRMINGHAM LEEDS GLASGOW
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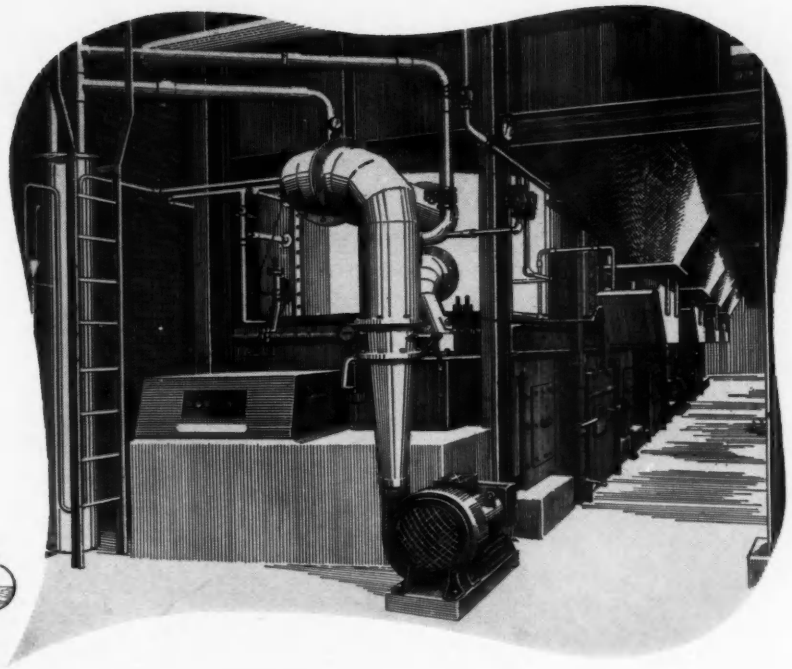
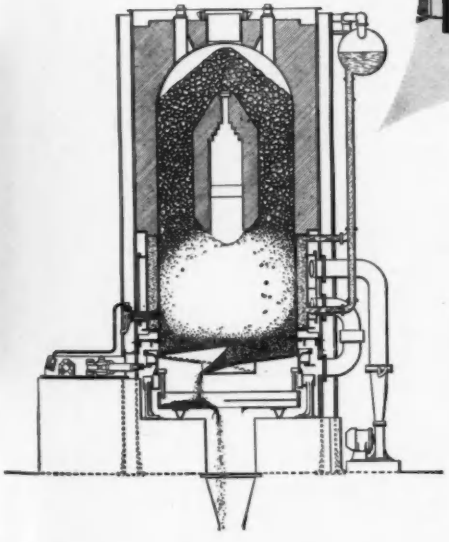
less labour, less fuel –
and the GAS STAYS HOT





West's "Hot Gas" Mechanical Producer

does more than eliminate manual clinkering. It has a hot gas efficiency of 90% and shows a marked reduction in the combustible content of the ashes. That, in turn, means fuel economy.

Producer and dust extractor are enclosed in a heavily insulated steel casing. The gas offtake, situated centrally immediately over the flare bed, draws off gas at formation temperature and is completely insulated, so that full advantage is taken of the sensible heat conveyed DIRECT to the settings. Dust extraction efficiency is up to 90%.

To maintain a constant depth of ash below the fuel bed, the speed of the revolving helical grate which removes the ash is automatically controlled by a novel device.

West's Gas
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NEAT

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Light and compact. Finished in grey vitreous enamel or cream at small extra cost. Available with two rings — type FA/2.

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Sturdily constructed appliance that will stand up to hard usage. Standard grey finish. 2, 3 and 4 units.

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This is an extension of the Single-Burner Hotplate and incorporates the same features. Ideal for casserole cooking or general uses.

✳ **However low gas jet is turned, it will not "pop back".**

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✳ The burner is silent whatever the setting of the tap.

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